Go To Table Of Contents

115 -001 thru -002

Ritter® by MIDMARK

OB/GYN Chair

Service and Parts Manual

Serial Number Prefix:
A

115 -001 thru -002

FOR USE BY MIDMARK
TRAINED TECHNICIANS ONLY

SF-1546

Part No. 003-0221-00 Rev. E (1/01/04)

Return To Table Of Contents

TABLE OF CONTENTS

Subject	Page
Important Instructions	1
Parts Replacement	3
Periodic Inspection Procedures	3
Removal & Replacement of Upholsted Sections	
Pillow	5
Back	5
Filler	5
Seat	6
Footrest Extension	6
Armrest	6
Leg Support	7
Removal & Replacement of Chair Panels	7
Removal & Replacement of Shrouds & Motor Cover	
Back Shroud	7
Back Section Cover	8
Seat Shroud	8
Control Enclosure	8
Footrest Extension	9
Leg Support Shroud	10
Motor Cover	10
Leg Supports	
Removal& Replacement	12
Latch Adjustment	13
Patient's Footstep	
Reversing	13
Removal& Replacement	14
Adjustment	14
Removal & Replacement of Rubberized Tread	14
Power System Operation	14
Hydraulic System	
Adding Oil	15
Oil Leaks	16
Removal & Replacement of Hydraulic Hoses	
Acquire &Return Hose	16
Base Return Hose	16
Removal & Replacement of Hydraulic Cylinders	
Left-Hand Base	17
Right-Hand Base	18
Seat	20
Back	21
Footswitch	
Removal & Replacement of Footswitch	23
Removal & Replacement of Foot Control Switches	23
Removal & Replacement of Footswitch Cord	24
Foot Control Switch Adjustment	24
Removal & Replacement of Power System Parts	
Power Cord	25
Base Cylinder Solenoids	25
Seat Cylinder Solenoid	26
Back Cylinder Solenoid	26
Base Anticavitation Solenoid Valve	26
Back Anticavitation Solenoid Valve	27
PC Board	28
Fuse	29
Reed Switches	29
Motor Capacitors	30
Motor/Pump	30
Lights	31
Transformer	31
Reed Switch Adjustments	
Base Cylinder Switches	32
Seat Cylinder Switches	33
Back Cylinder Switches	34
Special Tools	35
Troubleshooting Guides	
Mechanical	36
Electrical/Hydraulic	37
115Wiring Diagram	47
Hydraulic Flow Diagrams	48

Copyright by Midmark Corporation 1978

IMPORTANT INSTRUCTIONS

Safety First

Throughout this manual are "Notes", 'CAUTIONS", and **"DANGER"** warnings that call attention to particular procedures. The items are used as follows:

NOTE

A note is used to amplify an operating procedure, practice, or condition.

CAUTION

A CAUTION IS USED FOR AN OPERATING PROCEDURE, PRACTICE, OR CONDITION WHICH, IF NOT CORRECTLY FOLLOWED, COULD RESULT IN EQUIPMENT DAMAGE.

DANGER

A DANGER IS USED FOR AN OPERATING PROCEDURE, PRACTICE, OR CONDITION WHICH, IF NOT CORRECTLY FOLLOWED, COULD RESULT IN PERSONAL INJURY.

For your personal safety all **DANGER** warningsare repeated here. Become thoroughly familiar with them and observe them at all times.

1. **KEEP HANDS, FINGERS, AND ALL OTHER PARTS OF THE BODY AWAY FROM AND FREE OF MOVING PARTS. FAILURE TO FOLLOW THIS COULD RESULT IN PERSONAL INJURY.**
2. **ALWAYS DISCONNECT THE TABLE POWER CORD FROM THE WALL RECEPTACLE BEFORE ATTEMPTING ANY SERVICE OR MAINTENANCE OF THE EQUIPMENT. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
3. **FAILURE TO PERFORM A PERIODIC INSPECTION COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
4. **FAILURE TO REATTACH THE GREEN GROUNDING WIRE MAY RESULT IN PERSONAL INJURY.**
5. **DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.**
6. **WHEN REPLACING THE BACK SHROUD, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE SHROUD. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
7. **WHEN REPLACING THE BACK SECTION COVER, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE COVER. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
6. **WHEN REPLACING THE SEAT SHROUD, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE SHROUD. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
9. **WHEN REPLACING THE CONTROL ENCLOSURE, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE ENCLOSURE. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
10. **FAILURE TO INSTALL FOOTREST EXTENSION STOP MAY RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
11. **WHEN REPLACING THE LEG SUPPORT SHROUD, MAKE SURE ALL WIRES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE SHROUD. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
12. **WHEN REPLACING THE BACK SECTION OF THE MOTOR COVER, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE COVER. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
13. **THE ASSISTANT MUST SUPPORT THE SEAT AND SEAT CYLINDER UNTIL THE MOTOR COVER IS REMOVED. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
14. **THE TWO ASSISTANTS MUST SUPPORT THE BACK AND SEAT SECTIONS WHEN THE CLEVIS PINS ARE REMOVED FROM THE BASE CYLINDERS. FAILURE TO SUPPORT THESE SECTIONS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
15. **FAILURE TO INSTALL AND USE THE PROP AS SHOWN COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
16. **FAILURE TO REPLACE THE "E"-RING MAY RESULT IN EQUIPMENT DAMAGE OR PERSONAL INJURY.**
17. **FAILURE TO RECONNECT LIKE COLORED WIRES AND LIKE NUMBERED WIRES AND REATTACH THE GROUNDING WIRE MAY RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**
16. **HYDRAULIC OIL IN THIS EQUIPMENT IS UNDER HIGH PRESSURE WHEN EQUIP-**

Return To Table Of Contents

MENT IS IN OPERATION. NEVER CHECK OR ATTEMPT TO REPAIR ANY OIL LINE WITHOUT FIRST SHUTTING OFF THIS EQUIPMENT AND UNPLUGGING THE POWER CORD.

19. **WHEN CHANGING A HOSE, NOTE HOW THE WIRES, HOSES, HOSE FITTINGS, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR, RESULTING IN ELECTRICAL SHOCK OR EQUIPMENT DAMAGE.**

20. **WHEN CHANGING A CYLINDER, NOTE HOW THE WIRES, HOSES, HOSE FITTINGS, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR, RESULTING IN ELECTRICAL SHOCK OR EQUIPMENT DAMAGE.**

21. **FAILURE TO PRESET THE CLEVIS AND MAINTAIN. A MINIMUM ENGAGEMENT OF 5 TURNS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**

22. **DO NOT ATTEMPT TO GUIDE THE CYLINDER ROD WITH YOUR HANDS WHILE THE CHAIR IS IN MOTION. REMAIN CLEAR OF THE CHAIR UNTIL THE CHAIR IS MOTIONLESS IN THE TRENDELENBERG POSITION. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY.**

23. **IF THE ROD CLEVIS MUST BE ADJUSTED TO ENABLE THE CLEVIS PIN TO BE INSERTED, ALL ADJUSTMENTS MUST CAUSE THE CLEVIS TO FURTHER ENGAGE THE ROD. ONCE THE CLEVIS HAS BEEN ADJUSTED, IT MUST BE LOCKED IN PLACE WITH THE JAM NUT. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT 'DAMAGE.**

24. **THE ASSISTANT MUST SUPPORT THE SEAT UNTIL THE NEW CYLINDER IS INSTALLED. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**

25. **DONOTADJUSTTHESTOPMORETHANAN ADDITIONAL ½ TURN AFTER AUDIBLE CLICK IS HEARD. ADJUSTING THE STOP MORE THAN ½ TURN MAY RESULT IN DAMAGE TO THE SWITCH OR PERSONAL INJURY.**

26. **WHEN CHANGING A CYLINDER SOLENOID, NOTE HOW THE WIRES, HOSES, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR RESULTING IN ELECTRICAL SHOCK OR EQUIPMENT DAMAGE.**

27. **THE ASSISTANT MUST SUPPORTTHESEAT SECTION UNTIL THE BACK CYLINDER IS REATTACHED. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**

26. **WHEN REMOVING THE WIRES FROM THE PC BOARD, NOTE THE POSITION OF THE WIRES SO THAT THEY MAY BE REPLACED ON THE SAME TERMINALS. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**

29. **REPLACE FUSE ONLY WITH THE SAME TYPE AND RATING. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**

30. **FAILURE TO ADJUSTTHE REED SWITCHES AS DESCRIBED COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**

31. **DO NOT ATTEMPT ELECTRICAL CONTINUITY CHECKS OR ANY WIRING TESTS WITH THE CHAIR PLUGGED INTO THE WALL OUTLET. FAILURE TO DISCONNECT POWER COULD RESULT IN ELECTRICAL SHOCK.**

To assure safer service and maintenance of this equipment:

1. Read this manual before servicing the equipment.

2. Be sure that you understand the instructions contained in this manual before attempting to service or repair the equipment.

DANGER

3. **KEEP HANDS, FINGERS, AND ALL OTHER PARTS OF THE BODY AWAY FROM AND FREE OF MOVING PARTS. FAILURE TO FOLLOW THIS COULD RESULT IN PERSONAL INJURY.**

DANGER

4. **ALWAYS DISCONNECT THE TABLE POWER CORD FROM THE WALL RECEPTABLE BEFORE ATTEMPTING ANY SERVICE OR MAINTENANCE OF THE EQUIPMENT. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.**

Nothing herein shall be construed as a warranty or guarantee regarding the equipment, its operation, or its suitability for any particular purpose. Express and implied warranties are herewith disclaimed by the manufacturer. The equipment has been designed in such a manner as to permit service and repair by dealer service personnel. However service and repairs shall be at the dealer's risk. In the event the dealer or his service personnel do not understand the instructions given or the nature of the malfunction experienced, a company salesman or a company service representative should be contacted.

Return To Table Of Contents

PARTS REPLACEMENT

The Model 115 OB/GYN Chair has been designed so that mechanical and electrical components can easily be repaired and/or replaced in the field if they should become defective for any reason.

If a part replacement should be required, the part must be ordered direct from the factory. When any part is ordered, a complete description or part number is required, along with Serial Number and date of installation of the chair. For details of the exchange plan, write the plant. (For location of serial number tag, see Item B, Fig. 12).

PERIODIC INSPECTION PROCEDURES

Due to the mechanical, electrical nature of this equipment, periodic inspections at six (6) month intervals are recommended.

DANGER

FAILURE TO PERFORM A PERIODIC INSPECTION COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

Listed below are items that must be inspected and the service or adjustments that may be required at a periodic inspection.

1. Verify that all footswitch controls and all chair features operate satisfactorily. See Model 115 Installation and Operation Manual, Part No. 003-0169-00, for operating instructions. See the Troubleshooting Guides on Page 36 if the chair does not operate properly. See Reed Switch Adjustments on Page 32 for correct positioning of the chair sections.
2. Inspect the hydraulic system for oil leaks and damage to the hydraulic hoses. Replace any damaged hose and route the hoses clear of moving parts.
3. Inspect the electrical system for loose connections and damage to the insulation on the wiring. Replace any damaged wiring and route the wires clear of moving parts. Tighten all loose connections.
4. Check for excessive sideplay of the leg supports. Add additional spacer washers, Item E, Fig 22 on the leg support pivot pin to reduce the sideplay.
5. Inspect the back pivots, Item A, Fig. 1. The pivot shoulder bolt, Item B, Fig. 1 should turn in synchronization with the back section as the back rotates. Also, the back section should be centered between the uprights with an equal amount of spacing, Pt. A, Fig. 2 on each side of the upright.

   To adjust the back pivots:

   a. remove the set screw, Item D, Fig. 32 with a 5/64" allen wrench.

   b. remove the pivot shoulder bolt, Item B, Fig. 1 with a 3/8" allen wrench.

   c. apply Loctite #271 to the threads of the pivot shoulder bolt and replace the bolt and thrust washer in the pivot, making sure the back is centered between the uprights with equidistant spacing, Pt. A, Fig. 2 on each side of the upright.

   d. turn the pivot shoulder bolt clockwise until the bolt head makes contact with the upright, then turn the pivot bolt 1/8 turn counterclockwise.

   e. apply Loctite #271 to the threads of the set screw and replace the set screw, tightening securely with a 5/64" allen wrench.

   f. wait 24 hours and then inspect the back pivots as above.

CAUTION

FAILURE TO ADJUST THE PIVOTS AS DESCRIBED COULD RESULT IN EQUIPMENT DAMAGE.

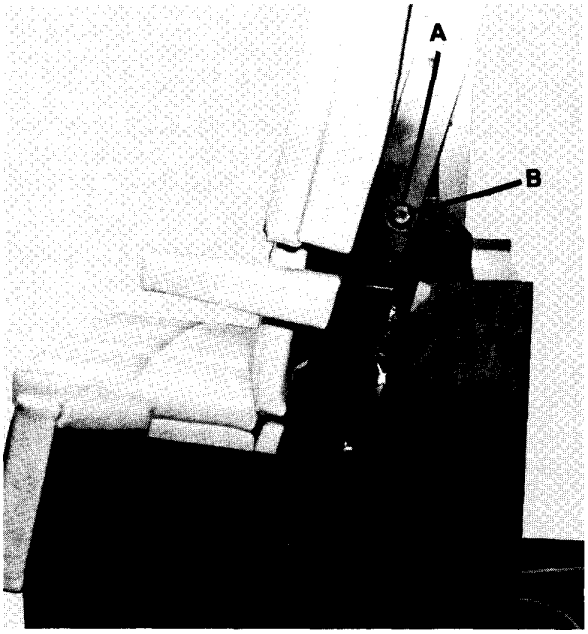


Fig. 1

6. Inspect the seat pivots, Item A, Fig. 3. The pivot bolt, Item B, Fig. 3 should not turn as the seat rotates. Also, the seat section should be centered between the pivots with equal spacing, Pt. C, Fig. 3 at each pivot.

   To adjust the seat pivots:

   a. remove the jam nut, Item D, Fig. 3 with a ¾" wrench.

   b. remove the pivot bolt, Item B, Fig. 3 with a 5/16" allen wrench.

Return To Table Of Contents

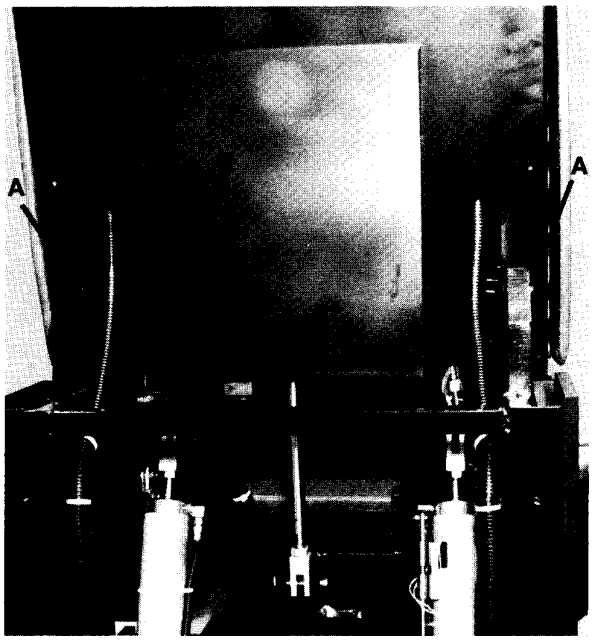


Fig. 2

c. apply Loctite #271 to the threads of the pivot bolt and replace the bolt in the pivot, making sure the seat is centered between the pivots with equidistant spacing, Pt. C, Fig. 3 at each pivot.

d. turn the pivot bolt clockwise until the bolt head makes contact with the seat, then turn the pivot bolt ⅛ turn counterclockwise.

e. replace the jam nut, Item D, Fig. 3 and tighten securely.

f. wait 24 hours and then inspect the seat pivots as above.

CAUTION

FAILURE TO ADJUST THE PIVOTS AS DESCRIBED COULD RESULT IN EQUIPMENT DAMAGE.

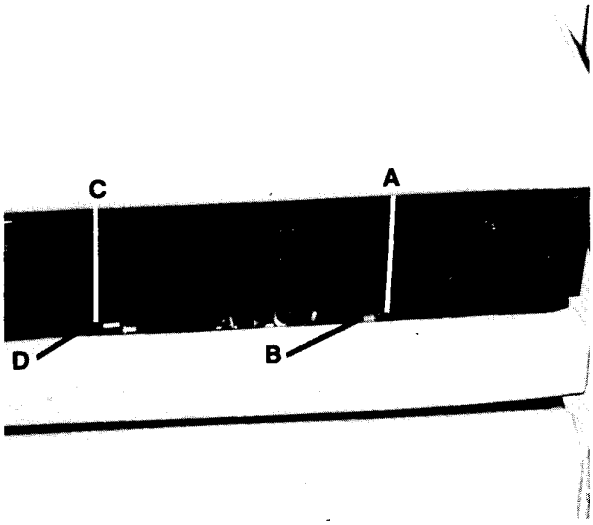


Fig. 3

7. Inspect the pivot frame pivots, Item A, Fig. 4. The pivot bolt, Item B, Fig. 4 should not turn as the pivot frame rotates. Also, the pivot frame should be centered between the pivots with equal spacing, Pt. C, Fig. 4 at each pivot.

   To adjust the pivot frame pivots:

   a. remove the set screw, Item D, Fig. 4 with a 5/64" allen wrench.

   b. remove the pivot bolt, Item B, Fig. 4 with a 5/16" allen wrench.

   c. apply Loctite #271 to the threads of the pivot bolt and replace the bolt in the pivot, making sure the pivot frame is centered between the pivots with equidistant spacing, Pt. C, Fig. 4 at each pivot.

   d. turn the pivot bolt clockwise until the bolt head makes contact with the pivot frame, then turn the pivot bolt ⅛ turn counterclockwise.

   e. apply Loctite #271 to the threads of the set screw and replace the set screw, tightening securely with a 5/64" allen wrench.

   f. wait 24 hours and then inspect the pivot frame pivots as above.

I-CAUTION-1

FAILURE TO ADJUST THE PIVOTS AS DESCRIBED COULD RESULT IN EQUIPMENT DAMAGE.

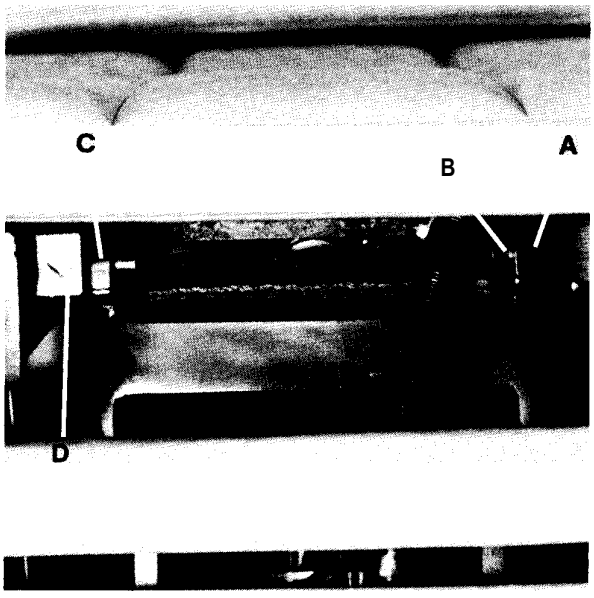


Fig. 4

8. Inspect the leg support upholstered section pivot, Item A, Fig. 5. The pivot bolt, Item B, Fig. 5 should not turn as upholstered section rotates. Also, the support arm, Item C, Fig. 5 should have very little play along the DD axis.

Return To Table Of Contents

To adjust the leg support upholstered section pivot:

a. while supporting the upholstered section, remove the pivot bolt, Item B, Fig. 5 with a 5/16" allen wrench.

b. apply Loctite #271 to the threads of the pivot bolt and replace the bolt in the pivot.

c. turn the pivot bolt clockwise until the bolt head makes contact with the support arm, then turn the pivot bolt ⅛ turn counterclockwise.

d. wait 24 hours and then inspect the leg support upholstered section pivots as above.

CAUTION

FAILURE TO ADJUST THE PIVOTS AS DESCRIBED COULD RESULT IN EQUIPMENT DAMAGE.

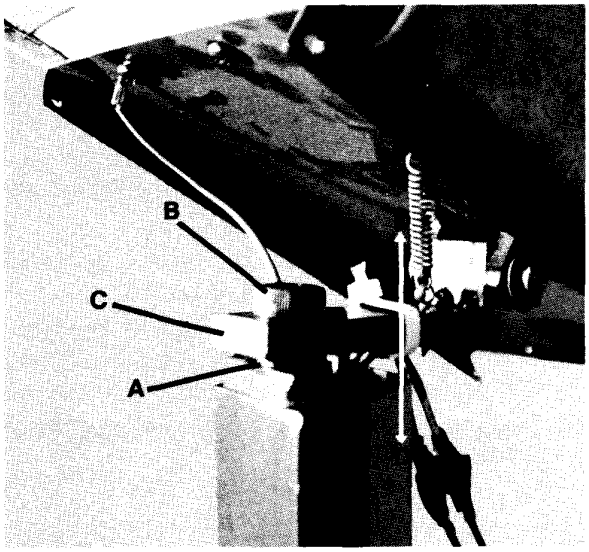


Fig. 5

REMOVAL AND REPLACEMENT OF UPHOLSTERED SECTIONS

Pillow

1) Loosen the upholstered back by pulling up and out on both sides, separating the velcro fasteners.

2) Remove pillow by pulling up on pillow hold-down piece, separating the velcro fasteners.

3) Replace pillow by inserting pillow hold-down piece under the back section so that the velcro strip, Item A, Fig. 6 makes contact with the velcro tabs, Item B, Fig.6.

4) Reposition the upholstered back section and press down and in on both sides.

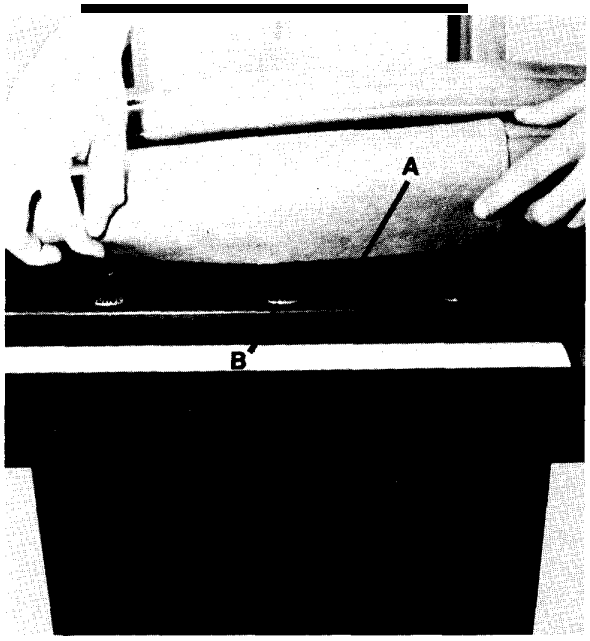


Fig. 6

NOTE

Position the upholstered back section so that rotation of the leg support will not cause undue wear to the upholstery.

Back

1) Remove the upholstered back by pulling up and out on both sides, separating the velcro fasteners.

2) Replace the upholstered back section and press down and in on both sides.

NOTE

Position the upholstered back section so that rotation of the leg support will not cause undue wear to the upholstery.

Filler

1) Remove the upholstered filler, Item A, Fig. 7 by removing (2) screws from the underside of the filler, (1) screw at each end.

2) Place new upholstered filler in position, align holes, and install (2) #10-24x⅝" screws on the underside of the filler, (1) screw at each end.

CAUTION

THE UPHOLSTERED FILLER HAS A NOTCHOUT IN THE CENTER OF THE WOOD BASE, POINT B IN FIG. 7. THIS RELIEVED SECTION MUST BE ALIGNED WITH THE NOTCHOUT IN THE FILLER MOUNTING PLATE. FAILURE TO ALIGN NOTCHOUTS WILL RESULT IN DAMAGE TO THE UPHOLSTERY.

NOTE

Position the upholstered filler so that rotation of the seat will not cause undue wear to the upholstery.

Return To Table Of Contents

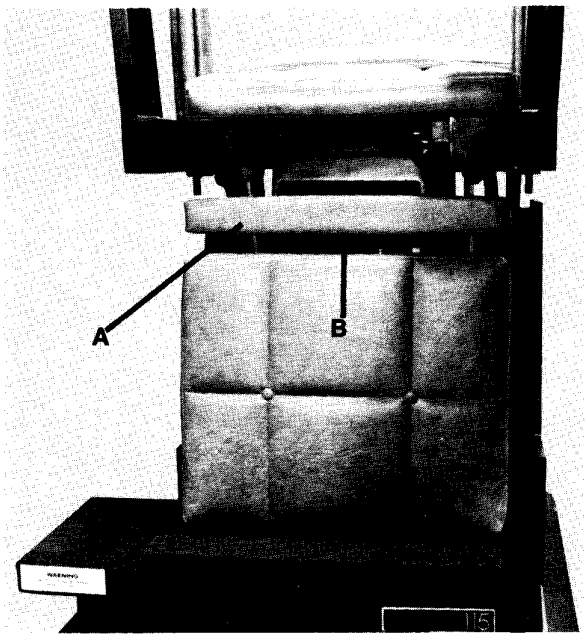


Fig. 7

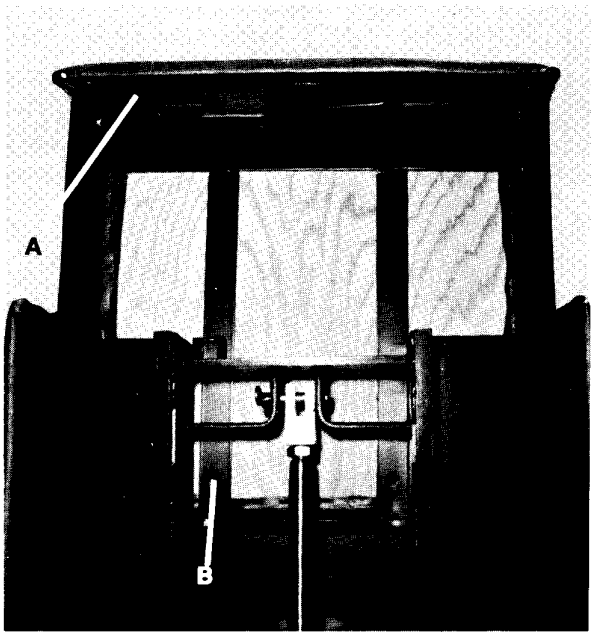


Fig. 8

Seat

1) Remove the upholstered seat by pulling up and out on both sides, separating the velcro fasteners.

2) Replace the upholstered seat section and press down and in on both sides.

NOTE

Position the upholstered seat section so that rotation of the seat will not cause undue wear to the upholstery.

Footrest Extension

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove seat shroud. See Removal of Shrouds on Page 8.

2) Extend footrest and remove (2) screws, Item A, Fig. 8.

3) Return footrest to its storage position and remove (2) screws, Item B, Fig. 8.

4) Slide the footrest upholstered section out of the seat leaving the footrest metal frame in position.

5) Slide new footrest upholstered section into seat, align holes, and install (2) #10-24x⅜" screws, Item B, Fig. 8.

6) Extend footrest and install (2) #10-24x⅝" screws, Item A, Fig. 8.

7) Replace seat shroud. See Replacement of Shrouds on Page 8.

Armrest

1) Grasp the upholstered armrest filler on the underside of the arm and pull out, separating the velcro fasteners.

2) Remove the upholstered armrest by removing (3) screws, Item A, Fig. 9.

3) Place new upholstered armrest in position, align holes, and install (3) #10-24x⅞" screws, Item A, Fig. 9.

4) Replace upholstered armrest filler and press down.

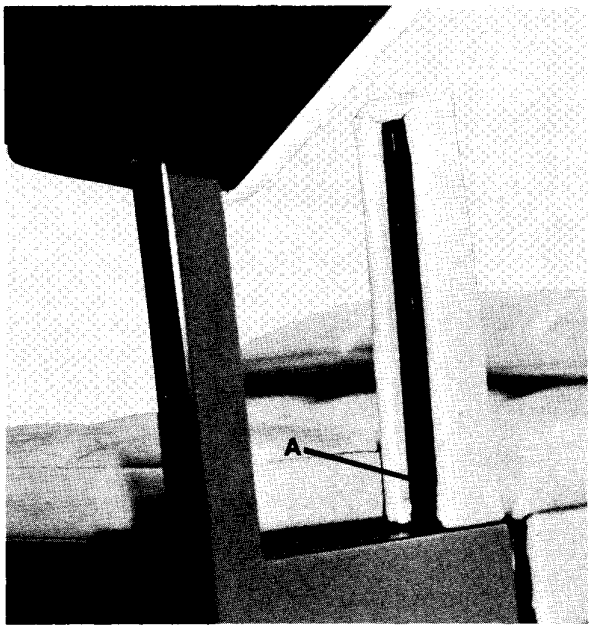


Fig. 9

Return To Table Of Contents

Leg Support

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove leg support shroud. See Removal of Shrouds on Page 10.

2) Remove the upholstered leg support top section by removing (4) screws, Item A, Fig. 10, noting the postion of the green grounding wire.

3) Remove the upholstered leg support pad by removing (2) screws, Item A, Fig. 11.

4) Place new upholstered leg support pad in position, align holes, and install (2) #10-24x⅜" screws, Item A, Fig. 11.

5) Place new upholstered leg support top section in position, align holes, and install (4) #10-24x⅜" screws, Item A, Fig. 10, making sure the green grounding wire is reattached.

DANGER

FAILURE TO REATTACH THE GREEN GROUNDING WIRE MAY RESULT IN PERSONAL INJURY.

6) Replace leg support shroud. See Replacement of Shrouds on Page 10.

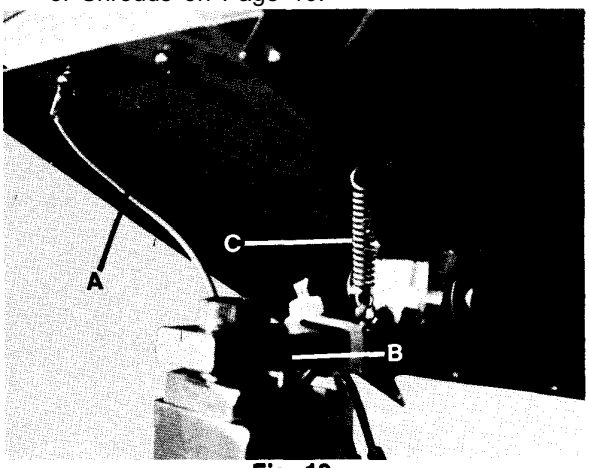


Fig. 10

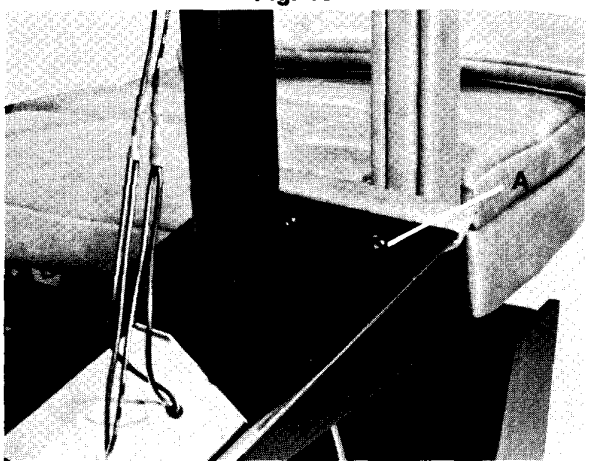


Fig. 11

REMOVAL AND REPLACEMENT OF CHAIR PANELS

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud. See Removal of Shrouds on Page 7.

2) Remove panel assembly from chair by removing (2) screws, Item C, Fig. 19.

3) Remove panel from shroud by removing (6) screws located on the back of the panel assembly.

4) Place new panel on shroud, align holes, and install (6) #6-32x⅝" screws to secure the panel to the shroud.

5) Place panel assembly in postion on chair, align holes, and install (2) #10-24x⅜" screws, Item C, Fig. 19.

6) Replace back shroud. See Replacement of Shrouds on Page 7.

REMOVAL AND REPLACEMENT OF SHROUDS AND MOTOR COVER

Back Shroud

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

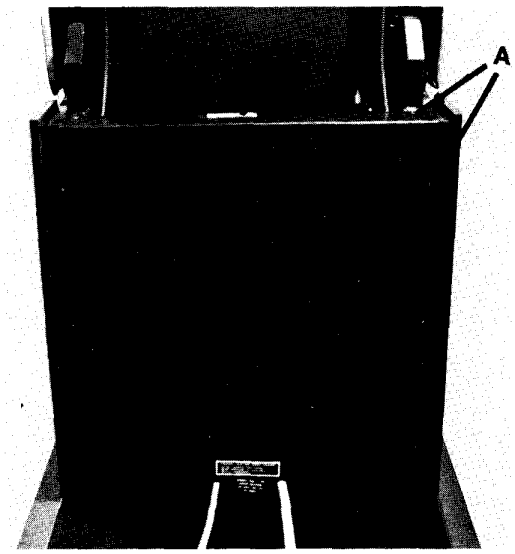


Fig. 12

Return To Table Of Contents

1) Remove back shroud by removing (8) screws, Item A, Fig. 12. It is easiest to do this by first placing the Model 115 in a chair position.

2) Replace back shroud by placing the shroud in position, aligning holes, and installing (8) #10-24x⅝" screws, Item A, Fig. 12.

DANGER

WHEN REPLACING THE BACK SHROUD, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE SHROUD. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

Back Section Cover

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back section cover by removing (8) screws, Item A, Fig. 13. It is easiest to do this by first placing the Model 115 in a chair position.

2) Replace back section cover by placing the cover in position, aligning holes, and installing (8) #10-24x⅜" screws, Item A, Fig. 13.

DANGER

WHEN REPLACING THE BACK SECTION COVER, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE COVER. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

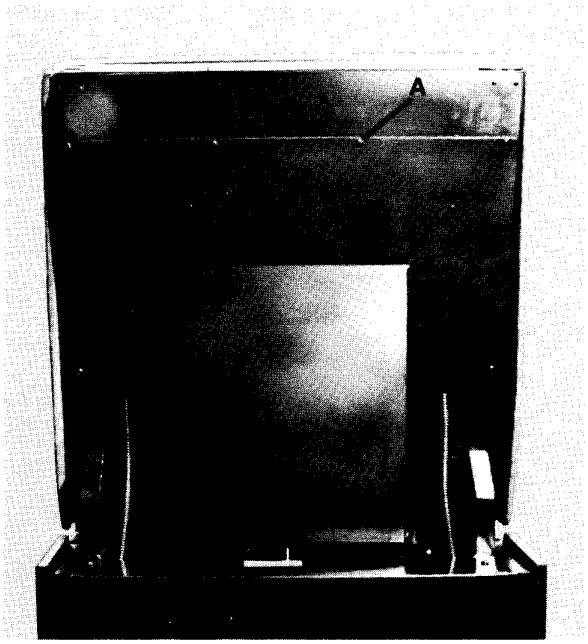


Fig. 13

Seat Shroud

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove seat shroud by removing (4) screws, Item A, Fig. 14.

2) Replace seat shroud by placing shroud in position, aligning holes, and installing (4) #8-32x⅜" screws, Item A, Fig. 14.

DANGER

WHEN REPLACING THE SEAT SHROUD, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE SHROUD. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

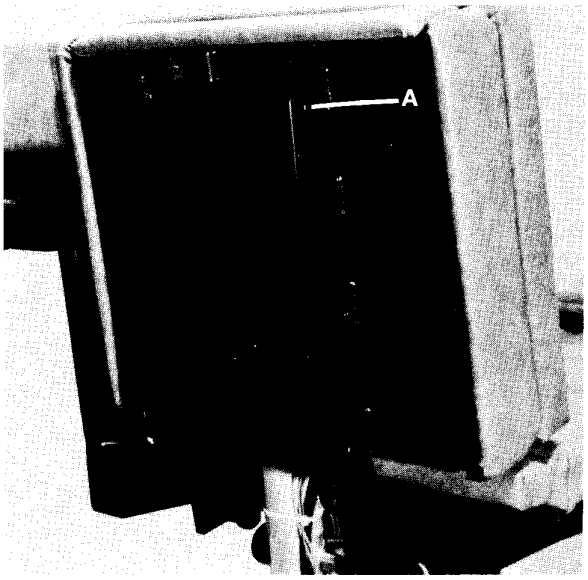


Fig. 14

Control Enclosure

The control enclosure houses the PC board and consists of (2) sections, an outer shroud that may be removed and a PC board holder that may be unfastened from the chair base. To remove and replace the control enclosure:

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud by removing (8) screws, Item A, Fig. 12.

2) Remove control enclosure outer shroud by removing (2) screws, Item A, Fig. 15 and sliding shroud up and out.

Return To Table Of Contents

3) Unfasten PC board holder from chair base by removing (1) screw, Item A, Fig. 16 and (2) screws, Item B, Fig. 16.

4) Replace PC board holder by installing (1) screw, Item A, Fig. 16 and (2) screws, Item B, Fig. 16.

5) Replace control enclosure outer shroud by placing shroud in position, aligning holes, and installing (2) #6x⅜" screws, Item A, Fig. 15.

DANGER

WHEN REPLACING THE CONTROL ENCLOSURE, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE ENCLOSURE. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

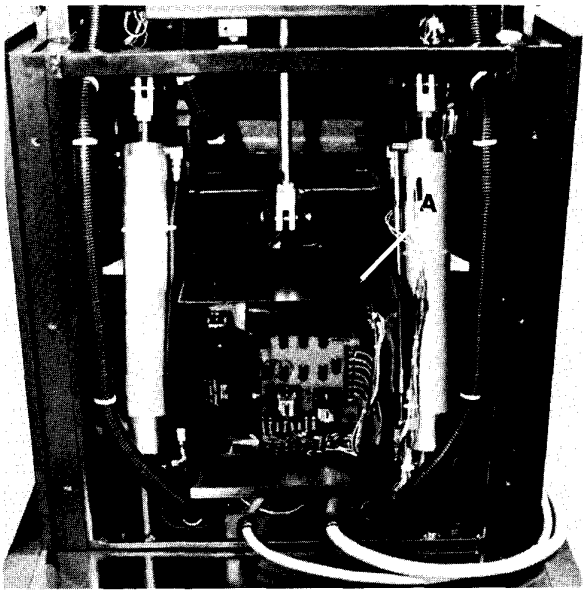


Fig. 15

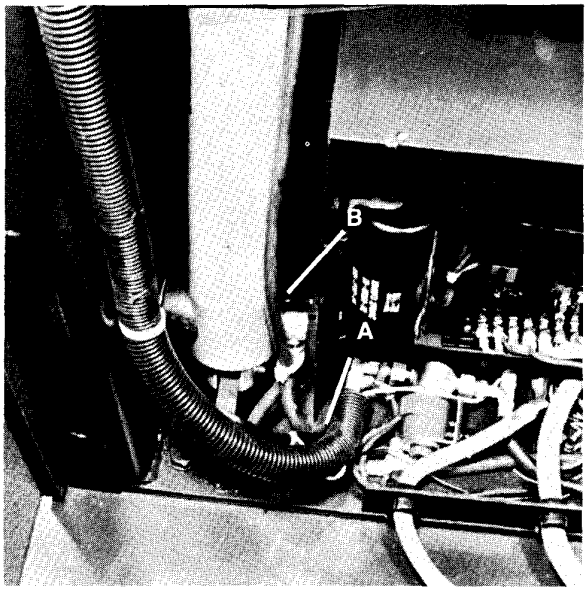


Fig. 16

6) Replace back shroud by placing the shroud in position, aligning holes, and installing (8) #10-24x⅝" screws, Item A, Fig. 12.

DANGER

WHEN REPLACING THE BACK SHROUD, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE SHROUD. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

Footrest Extension

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove seat shroud by removing (4) screws, Item A, Fig. 14.

2) Partially extend the footrest and remove the stop, Item A, Fig. 17 by removing (2) screws.

3) Remove the footrest extension from the chair by sliding it out of the seat.

4) Remove the upholstered section from the footrest metal frame by removing (2) screws Item B, Fig. 17 and (2) screws, Item C, Fig. 17.

5) Replace the footrest upholstered section on the new metal frame, align holes, and install (2) #10-24x⅜" screws, Item B, Fig. 17 and (2) #10-24x⅝" screws, Item C, Fig. 17.

6) Replace footrest extension in seat section and attach the stop, Item A, Fig. 17 by installing (2) #10-24x⅜" screws.

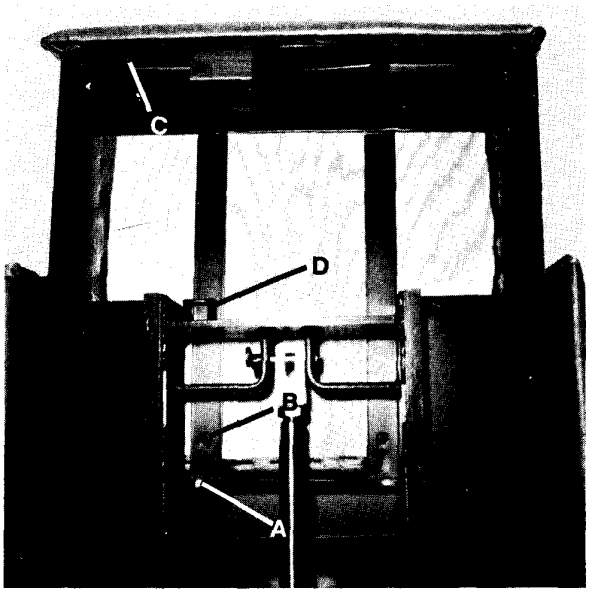


Fig. 17

Return To Table Of Contents

DANGER

FAILURE TO INSTALL FOOTREST EXTENSION STOP MAY RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

7) Replace seat shroud by placing shroud in position, aligning holes, and installing (4) #8-32x⅝" screws, Item A, Fig. 14.

DANGER

WHEN REPLACING THE SEAT SHROUD, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE SHROUD. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

Leg Support Shroud

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove leg support shroud by removing (4) screws, Item A, Fig. 18, (2) screws located on each side of the shroud, and carefully lowering the shroud to rest on the leg support.

2) Replace leg support shroud by placing shroud in position, aligning holes, and installing (4) #10-24x⅜" screws, Item A, Fig. 18.

DANGER

WHEN REPLACING THE LEG SUPPORT SHROUD, MAKE SURE ALL WIRES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE SHROUD. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

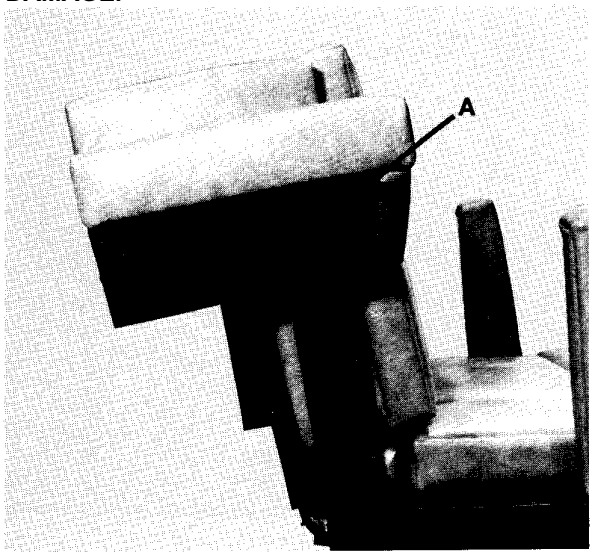


Fig. 18

Motor Cover

The motor cover is in two sections. The top section, Item A, Fig. 19 has to be removed for any servicing on the motor/pump. The back section, Item B, Fig. 41 should be removed only as required.

The motor cover is easiest to remove when the Model 115 is in a Trendelenberg position. If possible, place the Model 115 in a Trendelenberg position before attempting to remove the motor cover.

Three procedures are described below to remove the motor cover. Use Procedure #1 if the Model 115 is in a Trendelenberg position. Use Procedure #2 if the Model 115 is situated between a table and a lithotomy position. Use Procedure #3 if the chair is situated between a chair and a table position.

Procedure #1

Removal and replacement of motor cover with Model 115 in a Trendelenberg position.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove top section of motor cover by removing (8) screws, Item B, Fig. 19 and sliding cover up and out.

2) If required, remove back section of motor cover by removing (6) screws located along bottom flange and lifting cover up and out.

3) Replace back section of motor cover by placing cover in position, aligning holes, and installing (6) #10-24x⅜"screws through the bottom flange.

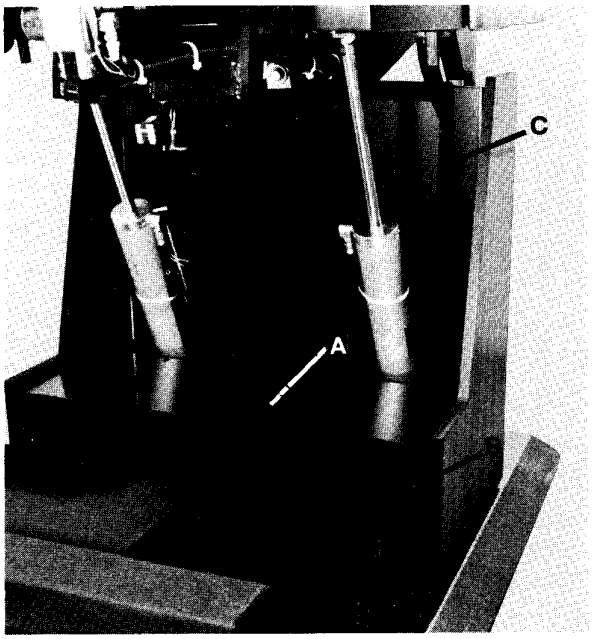


Fig. 19

Return To Table Of Contents

DANGER

WHEN REPLACING THE BACK SECTION OF THE MOTOR COVER, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE COVER. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

4) Replace top section of motor cover by placing cover in position, aligning holes, and installing (8) #6x⅜" screws, Item B, Fig. 19.

Procedure #2

Removal and replacement of motor cover with the Model 115 situated between the table and the lithotomy position.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove seat shroud by removing (4) screws, Item A, Fig. 14.

2) With an assistant supporting the seat section and the seat cylinder, remove the cotter pin and clevis pin, Item A, Fig. 29 from the rod end of the seat cylinder.

DANGER

THE ASSISTANT MUST SUPPORT THE SEAT AND SEAT CYLINDER UNTIL THE MOTOR COVER IS REMOVED. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

3) Have the assistant raise the seat and seat cylinder enabling the top section of the motor cover to be removed by removing (8) screws, Item B, Fig. 19 and sliding the cover up and out.

4) If required, remove back section of motor cover by removing (6) screws located along bottom flange and lifting cover up and out.

NOTE

After removing the motor cover, the seat section and seat cylinder may be left hanging down while servicing the motor/pump.

5) After completing service on the motor/pump, reattach the seat to the seat cylinder by placing the cylinder in position as shown in Fig. 29, enabling the clevis pin, Item A, Fig. 29 and cotter pin to be installed.

6) Temporarily plug the power cord into a wall receptacle and place the Model 115 in a Trendelenberg position by first depressing the "Table Acquire" foot control switch until the table position is achieved and then depressing the "Pelvic Tilt Up" foot control switch until maximum tilt is achieved.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

7) Replace back section of motor cover by placing cover in position, aligning holes and installing (6) #10-24x⅜"screws, through the bottom flange.

DANGER

WHEN REPLACING THE BACK SECTION OF THE MOTOR COVER, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE COVER. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

8) Replace top section of motor cover by placing cover in position, aligning holes, and installing (8) #6x⅜"screws, Item B, Fig. 19.

9) Replace seat shroud by placing shroud in position, aligning holes, and installing (4) #8-32x¼"screws, Item A, Fig. 14.

DANGER

WHEN REPLACING THE SEAT SHROUD, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE SHROUD. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

Procedure #3

Removal and replacement of motor cover with the Model 115 situated between the chair and table position.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove the cotter pin and clevis pin, Item C, Fig. 28 from the rod end of the right-hand base cylinder and let cylinder rest against the motor cover.

NOTE

It may be necessary to remove the back section cover to have access to the cotter and clevis pins. If required remove the back section cover by removing (8) screws, Item A, Fig. 13.

2) With two assistants supporting the back and seat remove the cotter pin and clevis pin, Item C, Fig. 27 from the rod end of the left-hand base cylinder and let cylinder rest against the motor cover.

Return To Table Of Contents

DANGER

THE TWO ASSISTANTS MUST SUPPORT THE BACK AND SEAT SECTIONS WHEN THE CLEVIS PINS ARE REMOVED FROM THE BASE CYLINDERS. FAILURE TO SUPPORT THESE SECTIONS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

3) Have the two assistants rotate the back section upward enabling the prop, Item A, Fig. 20 (See Special Tools on Page 35) to be attached to the back section.

4) Attach the prop to the back section by inserting a clevis pin through the clevis support on the back section and through the hole in the end of the prop and then installing a cotter pin. See Pt. A, Fig. 21.

5) With the end of the prop resting against the footstep channel as shown in Fig. 20, slowly lower the back section until the full weight is supported by the prop.

DANGER

FAILURE TO INSTALL AND USE THE PROP AS SHOWN COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

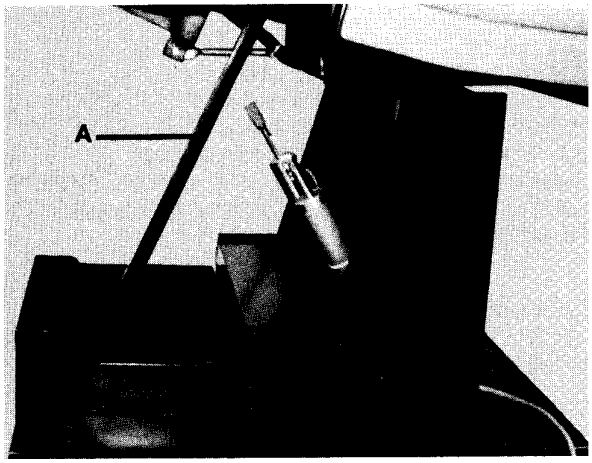


Fig. 20

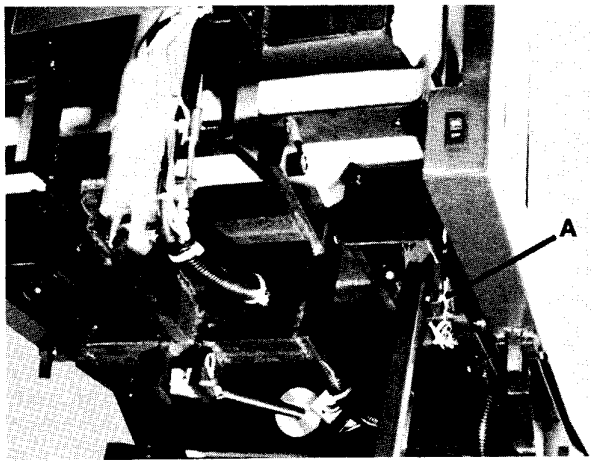


Fig. 21

6) Remove top section of motor cover by removing (8) screws, Item B, Fig. 19 and sliding cover up and out.

7) If required, remove back section of motor cover by removing (6) screws located on the bottom flange and lifting cover up and out.

8) Replace back section of motor cover by placing cover in position, aligning holes, and installing (6) #10-24x⅜"screws through the bottom flange.

DANGER

WHEN REFLACING THE BACK SECTION OF MOTOR COVER, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF THE COVER. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

9) Replace top section of motor cover by placing cover in position, aligning holes, and installing (8) #6x⅜"screws, Item B, Fig. 19.

10) With the two assistants rotating the back section upward, remove the prop, Item A, Fig. 20 by removing the cotter pin and clevis pin at Pt. A, Fig. 21.

11) Have the two assistants slowly let the back section rotate downward until the base cylinder rod clevises are aligned with the clevis supports on the back section, enabling the clevis pins to be inserted and the cotter pins installed. See Fig. 27.

NOTE

Replace the thrust washer on each side of and next to each clevis.

12) If back section cover was removed, replace cover by placing cover in position, aligning holes, and installing (8) #10-24x⅜" screws, Item A, Fig. 13.

DANGER

WHEN REPLACING BACK SECTION COVER, MAKE SURE ALL WIRES AND HYDRAULIC HOSES ARE PROPERLY ROUTED SO THAT THEY WILL NOT BE DAMAGED BY INSTALLATION OF COVER. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

LEG SUPPORTS

Removal and Replacement

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back section cover. See Removal of Shrouds on Page 8.

Return To Table Of Contents

2) Disconnect the wires leading into the leg support by pulling apart the quick-connect wire connectors ((4) connectors for left-hand leg support and (2) connectors for right-hand leg support) and removing (1) screw securing the green grounding wire.The wire connectors are located inside the back section at the leg support pivot, Pt. A, Fig. 22.

3) Remove the "E"-ring, Item B, Fig. 22 and any spacer washers, Item E, Fig. 22 from the leg support pivot.

4) Remove leg support from chair by unlatching leg support lock and pulling leg support straight out from side of chair.

5) Replace leg support on chair by

   a. inserting the wires through the pivot bushing in the back section.

   b. pushing the leg support pivot into the pivot bushing.

NOTE

Before replacing the leg support on the chair, make sure there is a 7/16" long spacer on the leg support pivot.

6) Replace spacer washers, Item E, Fig. 22 and "E"-ring, Item B, Fig. 22 on leg support pivot.

DANGER

FAILURE TO REPLACE "E'-RING MAY RESULT IN EQUIPMENT DAMAGE OR PERSONAL INJURY.

7) Connect the quick-connect wire connectors, matching wire colors and wire marker numbers, and attach the green grounding wire to the back section by installing (1) #10-24x⅜" screw through the grounding wire ring terminal.

DANGER

FAILURE TO RECONNECT LIKE COLORED WIRES AND LIKE NUMBERED WIRES AND REATTACH THE GROUNDING WIRE MAY RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

8) Replace back section cover. See Replacement of Shrouds on Page 8.

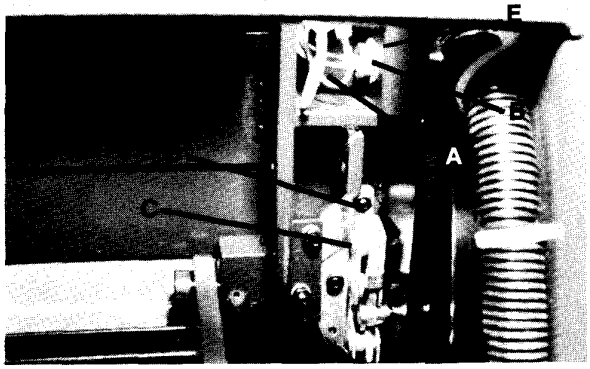


Fig. 22

Latch Adjustment

The leg support latch mechanism consists of two parts. A latch pin, Item A, Fig. 230n the leg support and a lock assembly, Item C, Fig. 22 mounted in the back section. For ease of operation the latch pin should engage and disengage the lock assembly smoothly.

To adjust the leg support latch:

1) The latch pin, Item A, Fig. 23 may be adjusted by loosening the lock nut, Item B, Fig. 23with a 9/16" wrench and screwing the latch pin in or out accordingly.

After adjusting the latch pin, lock it in place by tightening the lock nut with a 9/16" wrench.

2) The lock assembly may be adjusted by

   a. removing the back section upholstery. See Removal of Upholstery on Page 5.

   b. loosening the (3) ¼" - 20 hex nuts, Item D, Fig. 22.

   c. adjusting the position of the lock assembly and tightening the (3) ¼"-20 hex nuts, Item D, Fig. 22.

   d. replacing the back section upholstery. See Replacement of Upholstery on Page 5.

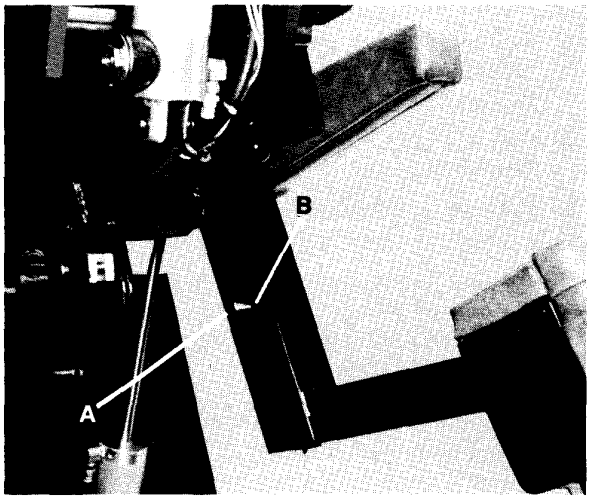


Fig. 23

PATIENT'S FOOTSTEP

Reversing

The footstep may be adjusted to slide out the right side of the chair base or slide out the left side of the chair base. The following details the procedures to be followed for changing a step that slides out the right side to one that slides out the left side.

1) Extend step out the right side of the base.

2) Remove the (2) hex head bolts, (2) lockwashers, (2) hex nuts, and the metal stop tab, Items A, Fig. 24.

Return To Table Of Contents

3) Remove step from chair by sliding it out the left side of the base.

4) Turn step around and install in chair by sliding it in from the right side of the base.

5) Extend step out the left side of the base and install (2) #6-32x½" hex head bolts, (2) #6 lockwashers, (2) #6-32 hex nuts, and the metal stop tab, Items A, Fig. 24.

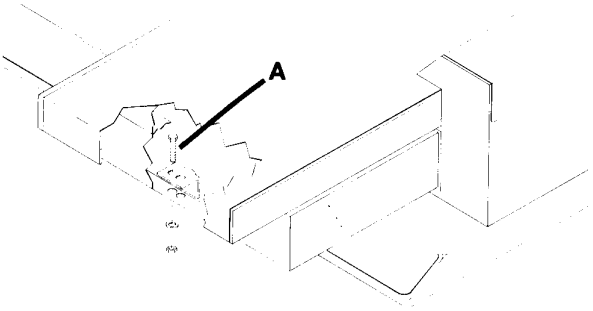


Fig. 24

Removal and Replacement

The following details the procedures to be followed for removing and replacing a step that slides out the right side of the base.

1) Extend step out the right side of the base.

2) Remove (2) hex head bolts, (2) lockwashers, (2) hex nuts, and metal stop tab, Items A, Fig. **24.**

3) Remove step from chair by sliding it out the left side of the base.

4) Replace step in chair by sliding it in the left side of the base.

5) Extend step out the right side of the base and install (2) #6-32x½" hex head bolts, (2) #6 lockwashers, (2) #6-32 hex nuts, and the metal stop tab, Items A, Fig. 24.

Adjustment

The footstep is designed to be moved by hooking the toe of a shoe under the front edge of the step and extending it to thedesired position. Should the footstep become difficult to move or the footstep movement interferes with the chair panels, the footstep may be adjusted by:

1) Loosening the (4) screws, Item A, Fig. 25 located at the rear of the front step, Item D, Fig. 25 and (4) screws, Item B, Fig. 25 located in the step channel, Item E, Fig. 25.

2) Loosening the (2) ⅜"-16x¾" hex head bolts located inside of the front step, (1) bolt at each end. See Pt. C, Fig. 25.

3) Adjusting the front step, Item D, Fig. 25 and the step channel, Item E. Fig. 25 so that the footstep slides easily with little sideplay.

4) Tightening the (4) #10-24x⅝" screws, Item A, Fig. 25, the (2) ⅜"-16x¾" bolts located inside the front step (See Pt. C, Fig. 25), and the (4) #10-24x⅝" screws, Item B, Fig. 25.

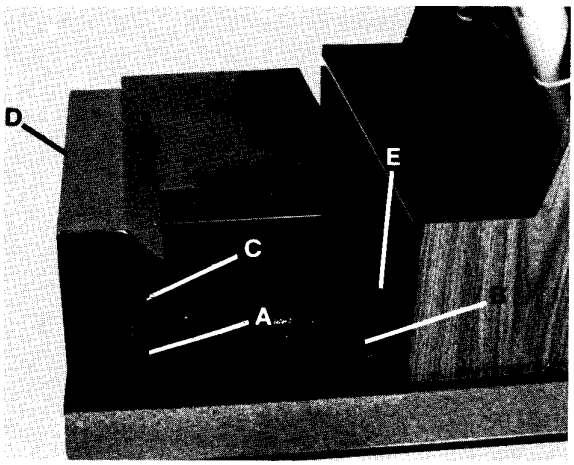


Fig. 25

REMOVAL AND REPLACEMENT OF RUBBERIZED TREAD

The rubberized tread on the tapered base, patient's footstep, and the doctor's footrest may be replaced by:

1) Remove tread by grasping end of tread and peeling off.

2) Remove all foreign material from surface where tread is to be applied.

3) Peel off paper backing on new tread, place tread in position, and firmly press on tread making sure all edges adhere to the surface.

NOTE

Surface must be clean and dry before application of new tread.

POWER SYSTEM OPERATION

The power system consists of four basic sub-assemblies:

1) An electric motor coupled to a hydraulic pump with an attached oil reservoir.

2) Four hydraulic cylinders with electric solenoid valves and magnetic reed switches to sense cylinder piston position.

3) A printed circuit board to control actuation of motor and cylinder solenoids.

4) A foot control to initiate chair positioning.

When a foot control switch is depressed, the integrated circuit logic on the PC board determines the present position of the chair by the state, open or closed, of the reed switches and then actuates appropiate relays to energize the motor and cylinder solenoids to sequence the chair to the desired position.

Return To Table Of Contents

For example, assume the Model 115 is in the chair position and it is desired to first achieve the lithotomy position and then return to the chair position. The following describes the basic operation of the power system for this sequence. (Referral to the Wiring Diagram on Page47 and the Hydraulic Flow Diagram on Page 48 will be helpful for this explanation.)

When the "Lithotomy Acquire" foot control switch is depressed, CR1 (control relay) actuates which energizes the base cylinder solenoids to open the cylinder valves. Simultaneously CR4 actuates to energize the motor which pumps oil from the reservoir into the valve end of the base cylinders. This extends the pistons of the base cylinders until the back section is horizontal at which time the base rod reed switch closes. Immediately CR1 deenergizes causing the base cylinder valves to close, locking the base cylinder pistons in that position. Simultaneously CR2 actuates which energizes the seat cylinder solenoid to open the cylinder valve. The motor now pumps oil from the reservoir into the rod end of the seat cylinder. This retracts the piston of the seat cylinder until the seat section is horizontal (table positon) at which time the seat clevis reed switch closes. Immediately CR2 deenergizes causing the seat cylinder valve to close, locking the seat cylinder piston in that position. Simultaneously CR3 actuates which energizes the back cylinder solenoid to open the cylinder valve. The motor now pumps oil from the reservoir into the rod end of the backcylinder. This retracts the piston of the back cylinder until the seat section is vertical (lithotomy position) at which time the back clevis reed switch closes. Immediately CR3 deenergizes causing the back cylinder valve to close, locking the back cylinder piston in that position. Simultaneously CR4 deenergizes causing the motor to shut off and stop pumping oil.

When the "Lithotomy Return" foot control switch is depressed, CR3 actuates which energizes the back cylinder solenoid to open the cylinder valve. Simultaneously CR5 actuates to reverse the motor which now pumps oil from the reservoir into the valve end of the back cylinder. This extends the piston of the back cylinder until the seat section is horizontal (table position) at which time the back rod reed switch closes. Immediately CR3 deenergizes causing the back cylinder valve to close, locking the back cylinder piston in that position. Simultaneously CR2 actuates which energizes the seat cylinder solenoid to open the cylinder valve. The motor now pumps oil from the reservoir into the valve end of the seat cylinder. Thisextends the piston of the seat cylinder until the seat section is vertical at which time the seat rod reed switch closes. Immediately CR2 deenergizes causing the seat cylinder valve to close, locking the seat cylinder piston in that position. Simultaneously CR1 actuates which energizes the base cylinder solenoids to open the cylinder valves. The motor now pumps oil from the reservoir into the rod end of the base cylinders. This retracts the pistons of the base cylinders until the chair position is achieved at which time the base clevis reed switch closes. Immediately CR1 deenergizes causing the base cylinder valves to close, locking the base cylinder pistons in that position. Simultaneously CR5 deenergizes causing the motor to shut off and stop pumping oil.

HYDRAULIC SYSTEM

The hydraulic oil used in the Model 115 power system is a colorless, odorless, nonstaining **LIGHT GRADE** mineral oil. This is the same grade of mineral oil as available from any hospital stockroom or pharmacy.

The unit is filled at the factory and should never need refilling unless fluid is lost through an external leak. No bleeding or purging of the hydraulic hoses is required. Any air that may reach the cylinder during shipment or during repairs will return to the reservoir after a short period of operation.

Adding Oil

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove motor cover. See Removal of Motor Cover on Page 10.

2) Remove plastic filler cap, Item A, Fig. 260n top of tank.

3) Remove small screw, Item B, Fig. 26 from end of tank and place a rag under this screw hole.

4) Fill tank with a **LIGHT GRADE** of mineral oil until oil starts to run out of small screw hole.

5) Replace small screw, Item B, Fig. 26 in end of tank.

6) Replace plastic filler cap, Item A, Fig. 26.

7) Replace motor cover. See Replacement of Motor Cover on Page 10.

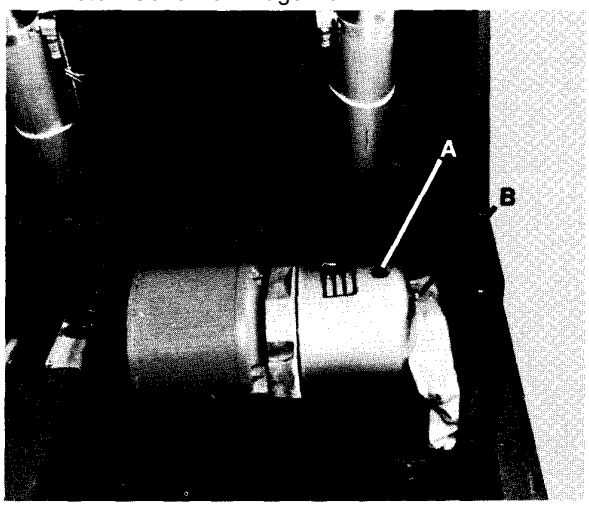


Fig. 26

Return To Table Of Contents

Oil Leaks

DANGER

HYDRAULIC OIL IN THIS EQUIPMENT IS UNDER HIGH PRESSURE WHEN EQUIPMENT IS IN OPERATION. NEVER CHECK OR ATTEMPT TO REPAIR ANY OIL LINE WITHOUT FIRST SHUTTING OFF THIS EQUIPMENT AND UNPLUGGING THE POWER CORD.

Oil leaks can be caused by defective or damaged hose lines, fittings, cylinder seals, or motor/pump seals. If an oil leak appears in any area, determine exact location of leak.

If a leak is located at a pipe fitting, tighten the fitting a turn or two. If this does not eliminate the leak, back the fitting out and use pipe sealer on the threads.

If a cylinder seal is leaking, replace the cylinder. See Removal and Replacement of Cylinders on Page 17.

If a hose line is leaking, remove and replace the complete hose assembly. See Removal and Replacement of Hydraulic Hoses on Page 16.

REMOVAL AND REPLACEMENT OF HYDRAULIC HOSES

Acquire and Return Hose

The acquire hose connects the top port of the pump to the valve end of the base cylinders, to the anticavitation solenoid valve on the rod end of the back cylinder, and to the rod end of the seat cylinder.

The return hose connects the bottom port of the pump to the anticavitation solenoid valve mounted on the chair base below the PC board, to the valve end of the back cylinder, and to the valve end of the seat cylinder.

To replace either one of these two long hose assemblies, use the following procedure:

DANGER

WHEN CHANGING A HOSE, NOTE HOW THE WIRES, HOSES, HOSE FITTINGS, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR, RESULTING IN ELECTRICAL SHOCK OR EQUIPMENT DAMAGE. See Fig. 28, 29, & 32.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove both sections of motor cover, back shroud, back section cover, seat shroud, control enclosure outer shroud, and unfasten the PC board holder. See Removal of Shrouds and Motor Cover on Page 7.

2) Place new hose along side of defective hose before removing damaged hose.

3) Remove fittings and nylon ties of defective hose, one at a time, replacing with fittings of new hose and replacing nylon ties. Begin at the seat cylinder, then back cylinder, then base cylinders or base anticavitation solenoid valve, and then the pump.

4) After installation of new hose, check to see that all cords and hoses work freely and areclearof obstructions and that all fittings are tight.

5) If any cylinders were detached to remove the motor cover and shrouds, they must now be reattached.

6) Temporarily plug the power cord into an electrical outlet and cycle the Model 115 from the chair to the lithotomy position and back to the chair position a few times to purge the system of air.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

7) If loss of hydraulic fluid was excessive during repair, oil must be added to the system. Oil level should be checked and oil replenished if required. See Adding Oil to the Hydraulic System on Page 15.

8) Replace motor cover and shrouds. See Replacement of Shrouds and Motor Cover on Page 7.

Base Return Hose

The base return hose connects the anticavitation solenoid valve mounted on the chair base below the PC board to the rod end of both basecylinders.

To replace the base return hose, use the following procedure:

DANGER

WHEN CHANGING A HOSE, NOTE HOW THE WIRES, HOSES, HOSE FITTINGS, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR, RESULTING IN ELECTRICAL SHOCK OR EQUIPMENT DAMAGE. See Fig. 28 & 38.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY

1) Remove back shroud and control enclosure outer shroud. See Removal of Shrouds on Page 7.

2) Place new hose along side of defective hose before removing damaged hose.

Return To Table Of Contents

3) Remove fittings and nylon ties of defective hose, one at a time, replacing with fittings of new hose and replacing nylon ties.

4) After installation of new hose, check to see that all cords and hoses work freely and are clear of obstructions and that all fittings are tight.

5) Temporarily plug the power cord into an electrical outlet and cycle the Model 115 from the chair to the lithotomy position and back to the chair position a few times to purge the system of air.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

6) If loss of hydraulic fluid was excessive during repair, oil must be added to the system. Oil level should be checked and oil replenished if required. See Adding Oil to Hydraulic System on Page 15.

7) Replace control enclosure outer shroud and back shroud. See Replacement of Shrouds on Page 7.

REMOVAL AND REPLACEMENT OF HYDRAULIC CYLINDERS

Left-Hand Base Cylinder

DANGER

WHEN CHANGING A CYLINDER, NOTE HOW THE WIRES, HOSES, HOSE FITTINGS, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE, SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR, RESULTING IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY

1) Remove back shroud and control enclosure outer shroud. See Removal of Shrouds on Page 7.

2) Remove the (1) large nylon tie, Item A, Fig. 27 from the cylinder and the (1) nylon tie, Item B, Fig. 27 from the hoses.

3) Remove the cotter pin and clevis pin, Item C, Fig. 27 from the rod end of the cylinder.

4) While supporting the cylinder, remove the "E"-ring and slide the clevis pin, Item D, Fig. 27 toward the upright, enabling thecylinderclevis to be removed from the pivot block.

5) Remove the solenoid, Item E, Fig. 27 from the cylinder by removing the large nut with a ¾" wrench and pulling solenoid off of valve stem.

6) Remove the (2) hose fittings from thedefective cylinder using a ½" wrench.

7) The clevis at the rod end of the new cylinder must engage a minimum number of threadson the rod. To preset the position of the clevis:

   a. unscrew clevis from the rod (it may be necessary to loosen the jam nut with a ¾"wrench).

   b. replace clevis on the rod and screw on 5 full turns.

   c. lock clevis in place with the jam nut.

DANGER

FAILURE TO PRESET THE CLEVIS AND MAINTAIN A MINIMUM ENGAGEMENT OF 5 TURNS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

8) Connect hose fittings tightly to new cylinder using a ½" wrench.

9) Install solenoid, Item E, Fig. 27 on new cylinder by placing solenoid on valve stem and securing with the large nut.

10) Place new cylinder in position and install clevis pin, Item D, Fig. 27 and "E"-ring at the valve end of the cylinder.

11) Install the (1) large nylon tie, Item A, Fig. 27 on the cylinder and the (1) nylon tie, Item B, Fig. 27 on the hoses and let the cylinder rest against the motor cover.

12) Temporarily plug the power cord into an electrical outlet and place the Model 115 in a Trendelenberg position by first depressing the "Table Acquire" foot control switch until the table position is achieved and then depressing the "Pelvic Tilt Up" foot control switch until the maximum tilt is achieved.

CAUTION

AS THE CYLINDER ROD EXTENDS FROM THE NEW CYLINDER, MAKE SURE THAT IT DOES NOT INTERFERE WITH MOVING SECTIONS OF THE CHAIR. FAILURE TO DO THIS COULD RESULT IN EQUIPMENT DAMAGE.

DANGER

DO NOT ATTEMPT TO GUIDE THE CYLINDER ROD WITH YOUR HANDS WHILE THE CHAIR IS IN MOTION. REMAIN CLEAR OF THE CHAIR UNTIL THE CHAIR IS MOTIONLESS IN THE TRENDELENBERG POSITION. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY.

13) Attach the new cylinder to the back section by aligning the rod clevis and installing the clevis pin, Item C, Fig. 27 and the cotter pin, placing a thrust washer next to and on each side of the clevis.

Return To Table Of Contents

DANGER

IF THE ROD CLEVIS MUST BE ADJUSTED TO ENABLE THE CLEVIS PIN TO BE INSERTED, ALL ADJUSTMENTS MUST CAUSE THE CLEVIS TO FURTHER ENGAGE THE ROD. ONCE THE CLEVIS HAS BEEN ADJUSTED, IT MUST BE LOCKED IN PLACE WITH THE JAM NUT. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

14) Extend and retract the base cylinders a few times to purge the system of air, checking the oil level in the reservoir and adding oil if required. See Adding Oil to Hydraulic System on Page 15.

15) For proper operation, the base cylinders must be synchronized. To check the synchronization of the cylinders, first place the Model 115 in a table position by depressing the "Table Acquire" foot control switch and then, while observing both base cylinder rods as they extend, depress the "Pelvic Tilt Up" foot control switch until maximum tilt is achieved. Both base cylinder rods should stopextending at the same time when full tilt is achieved. Should one cylinder rod continue to extend after the other cylinder rod has stopped, the cylinders are not synchronized.

The cylinders can be synchronized by adjusting the rod clevis on the cylinder whose rod extends farther. To adjust the clevis, loosen the jam nut and turn the cylinder rod into the clevis by using a 1/2" open end wrench on the wrenching flats, Item F, Fig. 27. After adjusting the clevis, lock the clevis in place with the jam nut.

16) Return to a chair position by depressing the "Table Return" foot control switch. The Model 115 should stop moving and the motor should shut off when the chair position is achieved. Should the motor continue to run or the back edge of the leg support is not parallel with the chair panel as shown in Fig. 47, the base clevis reed switch needs adjustment. See Reed Switch Adjustments on Page 32.

17) Starting from a chair position, depress the "Table Acquire" foot control switch until the base cylinders stop extending and the seat section begins to rotate downward. The back section should be horizontal as shown in Fig. 46. Should the back section be tilted, the base rod reed switch needs adjustment. See Reed Switch Adjustments on Page 32.

18) Check the adjustment of the tilt rod reed switch by first placing the Model 115 in a Trendelenberg position by depressing the "Table Acquire" foot control switch until a table position is achieved, then depressing the "Pelvic Tilt Up" foot control switch until maximum tilt is achieved, and then returning to a table position by depressing the "Pelvic Tilt Down" foot control switch until the Model 115 stops moving and the motor shuts off. When the motor shuts off and thechairstops moving, the back section should be horizontal as shown in Fig. 49. Should the back section be tilted, the tilt rod reed switch needs adjustment. See Reed Switch Adjustments on Page 32.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

19) Replace the control enclosure outer shroud and the back shroud. See Replacement of Shrouds on Page 7.

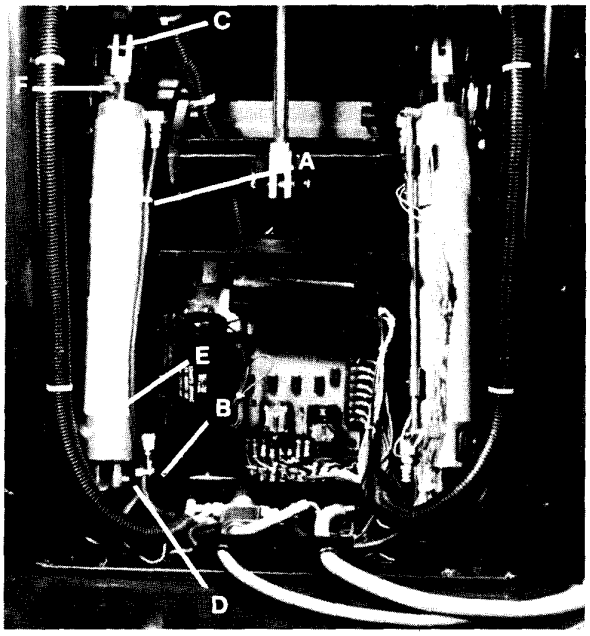


Fig. 27

Right-Hand Base Cylinder

DANGER

WHEN CHANGING A CYLINDER, NOTE HOW THE WIRES, HOSES, HOSE FITTINGS, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR RESULTING IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud and control enclosure outer shroud. See Removal of Shrouds on Page 7.

Return To Table Of Contents

2) Remove the (1) large nylon tie, Item A, Fig. 28 from the cylinder and the (2) small nylon ties, Item B, Fig. 28 from the wires.

3) Remove the cotter pin and clevis pin, Item C, Fig. 28 from the rod end of the cylinder.

4) While supporting the cylinder, remove the "E"-ring and slide the clevis pin, Item D, Fig. 28 toward the upright, enabling the cylinderclevis to be removed from the pivot block.

5) Remove the solenoid, Item E, Fig. 28 from the cylinder by removing the large nut with a ¾" wrench and pulling solenoid off of valve stem.

6) Remove the (2) hose fittings from thedefective cylinder using a ½" wrench.

7) The clevis at the rod end of the new cylinder must engage a minimum number of threadson the rod. To preset the position of the clevis:

   a. unscrew clevis from the rod (it may be necessary to loosen the jam nut with a ¾" wrench).

   b. replace clevis on the rod and screw on 5 full turns.

   c. lock clevis in place with the jam nut.

DANGER

FAILURE TO PRESET THE CLEVIS AND MAINTAIN A MINIMUM ENGAGEMENT OF 5 TURNS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

8) Connect hose fittings tightly to new cylinder using a ½" wrench.

9) Install solenoid, Item E, Fig. 280n new cylinder by placing solenoid on valve stem and securing with the large nut.

10) Disconnect the (6) wires to the (3) reed switches, Item F, Fig. 28, on the defective cylinder, by pulling apart the quick-connect wire connectors and connect these (6) wires to the corresponding reed switches on the new cylinder by mating the quick-connector wire connectors, See Wiring Diagram on Page 47.

11) Place new cylinder in position and install clevis pin, Item D, Fig. 28 and "E"-ring at the valve end of the cylinder.

12) Install the (1) large nylon tie, Item A, Fig. 28 on the cylinderand the (2) small nylon ties, Item B, Fig. 28 on the wires and let the cylinder rest against the motor cover.

13) Temporarily plug the power cord into an electrical outlet and place the Model 115 in a Trendelenberg position by first depressing the "Table Acquire" foot control switch until the table position is achieved and then depressing the "Pelvic Tilt Up" foot control switch until the maximum tilt is achieved.

CAUTION

AS THE CYLINDER ROD EXTENDS FROM THE NEW CYLINDER, MAKE SURE THAT IT DOES NOT INTERFERE WITH MOVING SECTIONS OF THE CHAIR. FAILURE TO DO THIS COULD RESULT IN EQUIPMENT DAMAGE.

DANGER

DO NOT ATTEMPT TO GUIDE THE CYLINDER ROD WITH YOUR HANDS WHILE THE CHAIR IS IN MOTION. REMAIN CLEAR OF THE CHAIR UNTIL THE CHAIR IS MOTIONLESS IN THE TRENDELENBERG POSITION. FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY.

14) Attach the new cylinder to the back section by aligning the rod clevis and installing the clevis pin, Item C, Fig. 28 and the cotter pin, placing a thrust washer next to and on each side of the clevis.

DANGER

IF THE ROD CLEVIS MUST BE ADJUSTED TO ENABLE THE CLEVIS PIN TO BE INSERTED, ALL ADJUSTMENTS MUST CAUSE THE CLEVIS TO FURTHER ENGAGE THE ROD. ONCE THE CLEVIS HAS BEEN ADJUSTED, IT MUST BE LOCKED IN PLACE WITH THE JAM NUT FAILURE TO DO THIS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

15) Extend and retract the base cylinders a few times to purge the system of air, checking the oil level in the reservoir and adding oil if required. See Adding Oil to Hydraulic System on Page 15.

16) For proper operation the base cylinders must be synchronized. To check the synchronization of the cylinders, first place the Model 115 in a table position by depressing the "Table Acquire" foot control switch and then, while observing both base cylinder rods as they extend, depress the "Pelvic Tilt Up" foot control switch until maximum tilt is achieved. Both base cylinder rods should stopextending at the same time when full tilt is achieved. Should one cylinder rod continue to extend after the other cylinder rod has stopped, the cylinders are not synchronized.

The cylinders can be synchronized by adjusting the rod clevis on the cylinder whose rod extends farther. To adjust the clevis, loosen the jam nut and turn the cylinder rod into the clevis by using a 1/2" open end wrench on the wrenching flats, Item G, Fig. 28. After adjusting the clevis, lock the clevis in place with the jam nut.

17) Return to a chair position by depressing the "Table Return" foot control switch. The Model 115 should stop moving and the motor should shut off when the chair position is achieved. Should the motor continue to run or the back edge of the leg support is not parallel with the

Return To Table Of Contents

chair panel as shown in Fig. 47, the base clevis reed switch needs adjustment. See Reed Switch Adjustments on Page 32.

18) Starting from a chair position, depress the "Table Acquire" foot control switch until the base cylinders stop extending and the seat section begins to rotate downward. The back section should be horizontal as shown in Fig. 46. Should the back section be tilted, the base rod reed switch needs adjustment. See Reed Switch Adjustments on Page 32.

19) Check the adjustment of the tilt rod reed switch by first placing the Model 115 in a Trendelenberg position by depressing the "Table Acquire" foot control switch until a table position is achieved, then depressing the "Pelvic Tilt Up" foot control switch until maximum tilt is achieved, and then returning to a table position by depressing the "Pelvic Tilt Down" foot control switch until the Model 115 stops moving and the motor shuts off. When the motor shuts off and the chairstops moving, the back section should be horizontal as shown in Fig. 49. Should the back section be tilted, the tilt rod reed switch needs adjustment. See Reed Switch Adjustments on Page **32.**

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

20) Replace the control enclosure outer shroud and the back shroud. See Replacement of Shrouds on Page 7.

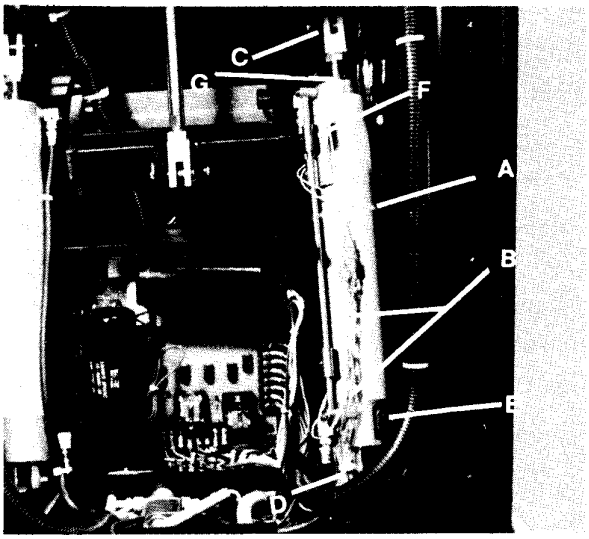


Fig. 28

Seat Cylinder

DANGER

WHEN CHANGING A CYLINDER, NOTE HOW THE WIRES, HOSES, HOSE FITTINGS, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR RESULTING IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove the motor cover and seat shroud. See Removal of Motor Cover and Shrouds on Page **7.**

NOTE

To facilitate servicing the seat cylinder, the motor cover should be removed at this time.

2) With an assistant supporting the seat section, remove the cotter pin and clevis pin, Item A, Fig. 29 from the rod end of the cylinder and let cylinder hang down.

DANGER

THE ASSISTANT MUST SUPPORT THE SEAT UNTIL THE NEW CYLINDER IS INSTALLED. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

3) Remove the (1) nylon tie, Item A, Fig. 30 from the wires and the (1) large nylon tie, Item B, Fig. 30 from the cylinder.

4) Remove the solenoid, Item C, Fig. 30 from the cylinder by removing the large nut with a ¾" wrench and pulling solenoid off of valve stem.

5) Disconnect the (4) wires to the (2) reed switches, Item B, Fig. 29 by pulling apart the quick-connect wire connectors. Note the wire connections so that they may be replaced exactly the same way.

6) Remove the (2) hose fittings from thedefective cylinder using a ½" wrench.

7) Remove the cylinder from the chair by removing the "E"-ring and clevis pin, Item D, Fig. 30 from the valve end of the cylinder.

8) The clevis at the rod end of the new cylinder must engage a minimum number of threadson the rod. To preset the position of the clevis:

   a. unscrew clevis from the rod (it may be necessary to loosen the jam nut with a ¾" wrench).

   b. replace clevis on the rod and screw on 5 full turns.

   c. lock clevis in place with the jam nut.

DANGER

FAILURE TO PRESET THE CLEVIS AND MAINTAIN A MINIMUM ENGAGEMENT OF 5 TURNS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

Return To Table Of Contents

9) Place new cylinder in position and install clevis pin, Item D, Fig. 30and "E"-ring at the valve end of the cylinder.

10) Install solenoid, Item C, Fig. 300n new cylinder by placing solenoid on valve stem and securing with the large nut.

11) Connect the (2) hose fittings tightly to the new cylinder using a ½" wrench.

12) Connect the (4) wires to the (2) reed switches, Item B, Fig. 29 by mating the quick-connect wire connectors. See Wiring Diagram on Page 47.

13) Install the (1) large nylon tie, Item B, Fig. 300n the cylinderand the (1) nylon tie, Item A, Fig. 30 on the wires.

14) Attach the new cylinder to the seat section by aligning the rod clevis and installing the clevis pin, Item A, Fig. 29 and the cotter pin.

15) Plug the power cord into an electrical outlet and depress the "Table Return" foot control switch until the seat section is vertical as shown in Fig. 46.

CAUTION

DEPRESS ONLY THE TABLE RETURN FOOT CONTROL SWITCH. DEPRESSING ANY OTHER FOOT CONTROL SWITCH COULD RESULT IN EQUIPMENT DAMAGE.

CAUTION

IF THE BASE CYLINDERS WERE DISCONNECTED TO REMOVETHE MOTOR COVER, THEY MUST BE REATTACHED AT THIS TIME. FAILURE TO REATTACH BASE CYLINDERS COULD RESULT IN EQUIPMENT DAMAGE.

16) Extend and retract the seat cylinder a few times to purgethesystem of air, checking the oil level in the reservoir and adding oil if required. See Adding Oil to Hydraulic System on Page 15.

17) Place the Model 115 in a table position by depressing the "Table Acquire" foot control switch. The chair should stop moving and the motor should shut off when the table position is achieved. Should the motor continue to run or the seat is not level with the back section as shown in Fig. 49, the seat clevis reed switch needs adjustment. See Reed Switch Adjustments on Page 33.

18) Starting from a table position, depress the "Table Return" foot control switch until the seat section stops rotating upward. When the seat sections stops rotating upward, the base cylinders should begin to retract. Should the base cylinders not begin to retract or the seat section is not parallel and level with the leg supports as shown in Fig. 46, the seat rod reed switch needs adjustment. See Reed Switch Adjustments on Page 33.

19) Replace seat shroud and motor cover. See Replacement of Motor Cover and Shrouds on Page 7.

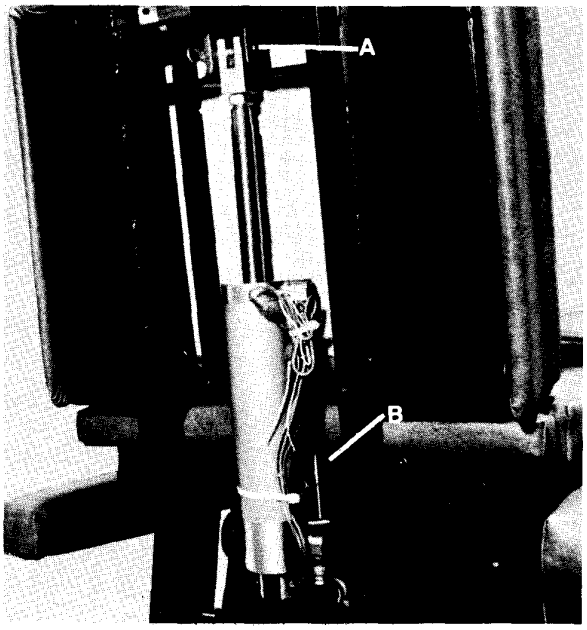


Fig. 29

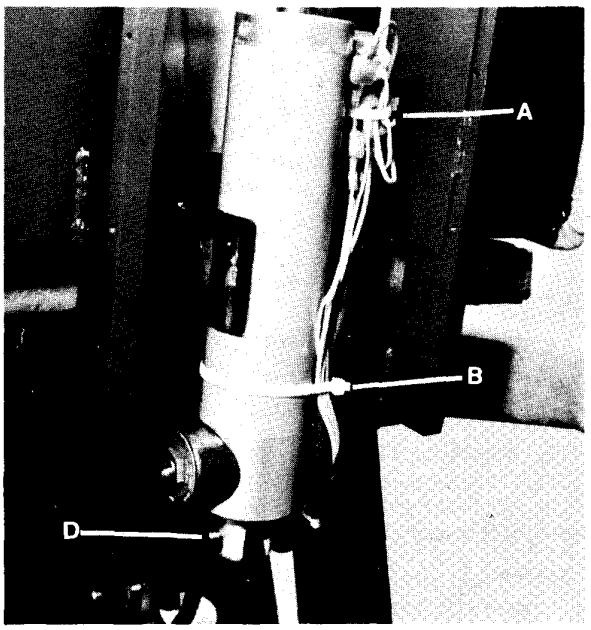


Fig. 30

Back Cylinder

DANGER

WHEN CHANGING A CYLINDER, NOTE HOW THE WIRES, HOSES, HOSE FITTINGS, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR RESULTING IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

Return To Table Of Contents

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove the motor cover and the back section cover. See Removal of Motor Cover and Shrouds on Page 7.

NOTE

To facilitate servicing the back cylinder, the motor cover should be removed at this time.

2) Remove the (5) nylon ties, Item A, Fig. 31 from the wires.

3) Remove the solenoid, Item B, Fig. 31 from the cylinder by removing the large nut with a ¾" wrench and pulling solenoid off of valve stem.

4) Disconnect the (4) wires to the (2) reed switches, Item C, Fig. 31 by pulling apart the quick-connect wire connectors. Note the wire connections so that they may be replaced exactly the same way.

5) Remove the anticavitation solenoid valve coil by prying off the small cap, Item C, Fig. 32 with a screwdriver and sliding the coil and bracket off the valve stem.

6) Remove the (1) hose fitting from the valve end of the cylinder and (1) hose fitting from the anticavitation solenoid valve at the rod end of the cylinder using a ½" wrench.

7) With an assistant supporting the seat section, remove the cylinder from the chair by removing the cotter pin and clevis pin, Item B, Fig. 32 from the rod end of the cylinder and the "E"-ring and clevis pin, Item D, Fig. 31 from the valve end of the cylinder.

DANGER

THE ASSISTANT MUST SUPPORT THE SEAT UNTIL THE NEW CYLINDER IS INSTALLED. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

8) The clevis at the rod end of the new cylinder must engage a minimum number of threadson the rod. To preset the position of the clevis:

   a. unscrew clevis from the rod (it may be necessary to loosen the jam nut with a ¾" wrench).

   b. replace clevis on the rod and screw on 5 full turns.

   c. lock clevis in place with the jam nut.

DANGER

FAILURE TO PRESET THE CLEVIS AND MAINTAIN A MINIMUM ENGAGEMENT OF 5 TURNS COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

9) Place new cylinder in position and install clevis pin, Item D, Fig. 31 and "E"-ring at the valve end of the cylinder and clevis pin, Item B, Fig. 32 and cotter pin at the rod end of the cylinder.

10) Install solenoid, Item B, Fin. 31 on new cylinder by placing solenoid on valve stem and securing with the large nut.

11) Connect the (1) hose fitting tightly to the valve end of the cylinder and the (1) hose fitting tightly to the anticavitation solenoid valve at the rod end of the cylinder using a ½" wrench.

12) Connect the (4) wires to the (2) reed switches, Item C, Fig. 31 by mating the quick-connect wire connectors. See Wiring Diagram on Page 47.

13) Replace the anticavitation solenoid valve coil and bracket on the valve stem and secure with the small cap, Item C, Fig. 32.

14) Install the (5) nylon ties, Item A, Fig. 31 on the wires.

15) Plug the power cord into an electrical outlet and depress the "Table Return" foot control switch until the seat section is vertical as shown in Fig. 46.

CAUTION

DEPRESS ONLY THE TABLE RETURN FOOT CONTROL SWITCH. DEPRESSING ANY OTHER FOOT CONTROL SWITCH COULD RESULT IN EQUIPMENT DAMAGE.

CAUTION

IF THE BASE CYLINDERS WERE DISCONNECTED TO REMOVETHE MOTOR COVER, THEY MUST BE REATTACHED AT THIS TIME. FAILURE TO REATTACH BASE CYLINDERS COULD RESULT IN EQUIPMENT DAMAGE.

16) Extend and retract the back cylinder a few times to purge the system of air, checking the oil level in the reservoir and adding oil if required. See Adding Oil to Hydraulic System on Page 15.

17) Place the Model 115 in a lithotomv oosition bv depressing the "Lithotomy Acquire" foot control switch. The chair should stop moving and the motor should shut off when the lithotomy position is achieved. Should the motor continue to run or the seat is not vertical as shown in Fig. 51, the back clevis reed switch needs adjustment. See Reed Switch Adjustments on Page 34.

18) Return to a table position from a lithotomy position, by depressing the "Table Acquire" foot control switch. The chair should stop moving and the motorshould shut off when the table position is achieved. Should the motor continue to run or the seat is not level with the back section as shown in Fig. 49, the back rod reed switch needs adjustment. See Reed Switch Adjustments on Page 34.

Return To Table Of Contents

19) Replace back section cover and motor cover. See Replacement of Shrouds and Motor Cover on Page 7.

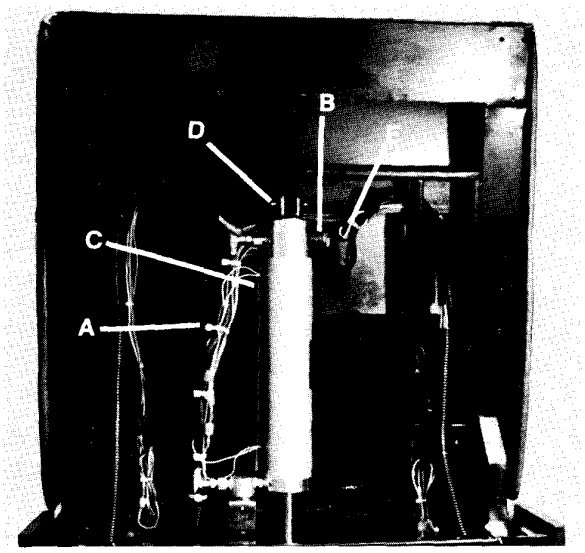


Fig. 31

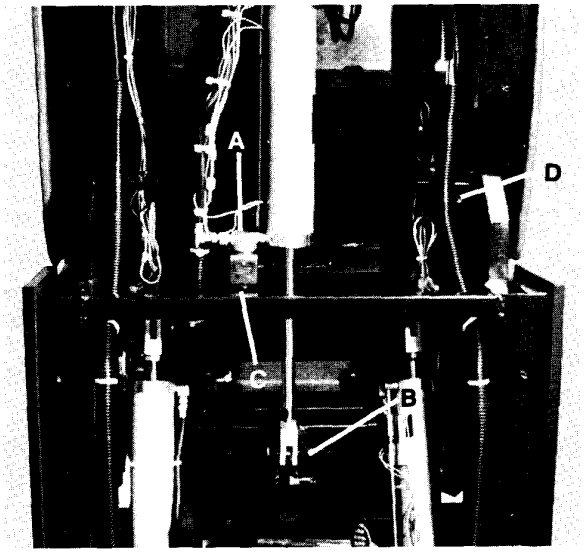


Fig. 32

FOOTSWITCH

Removal and Replacement of Footswitch

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

To remove the footswitch from the cord:

1) Remove the cover from the footswitch by removing (2) #10-32x⅜" machine screws, one from each end of the footswitch, and (3) #10-24x⅜" self-tapping screws along the back of the footswitch.

2) Disconnect cord by pulling apart the (6) quick connect wire connectors and removing the (1) #10-24x⅜" self-tapping screw, Item A, Fig. 33.

3) Grasp strain relief bushing with hand pliers (See Special Tools on Page 35), squeeze tab on bushing, and pull bushing out of hole in footswitch. See Fig. 33.

To replace the footswitch on the cord:

4) Position strain relief bushing on the cord, close the bushing, grasp bushing with hand pliers squeezing the tab on the bushing, and push bushing into the hole in the footswitch. See Fig. 33.

5) Connect cord to footswitch wires by mating the (6) quick connect wire connectors, matching the wire colors on the cord wires and footswitch wires.

6) Install the (1) #10-24x⅜" self-tapping screw, Item A, Fig. 33 through the green grounding wire terminal.

7) Place cover on footswitch, align holes, and install (2) #10-32x⅜" machine screws, one on each end of footswitch, and (3) #10-24x⅜" self-tapping screws along the back of the footswitch.

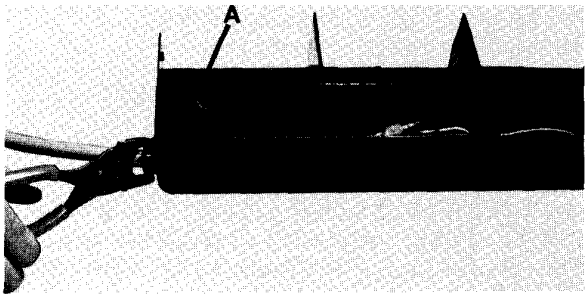


Fig. 33

Removal and Replacement of Foot Control Switches

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove cover from footswitch by removing (2) #10-32x⅜" machine screws, one from each end of the footswitch, and (3) #10-24x⅜" self-tapping screws along the back of the footswitch.

2) Remove the foot pedal cover by removing (1) screw, Item A, Fig. 34 and lifting cover upwards and towards front of footswitch.

Return To Table Of Contents

3) Remove defective switch from bracket by removing the (2) mounting screws and nuts, Item B, Fig. 34.

4) Place new switch in position on bracket, align holes, and install (2) each of #3-48x½" machine screws, #3 shakeproof internal lockwashers, and #3-48 hex nuts, Item B, Fig. 34.

5) Remove wires one at a time from defective switch and install on corresponding terminals of new switch. See Wiring Diagram on Page47.

6) Place foot pedal cover in position, align holes, and install (1) #10 shakeproof internal lockwasher and (1) #10-32x½" machine screw, Item A, Fig. 34.

7) Place cover on footswitch, align holes, and install (2) #10-32x⅜" machine screws, one on each end of footswitch, and (3) #10-24x⅜" self-tapping screws along the back of the footswitch.

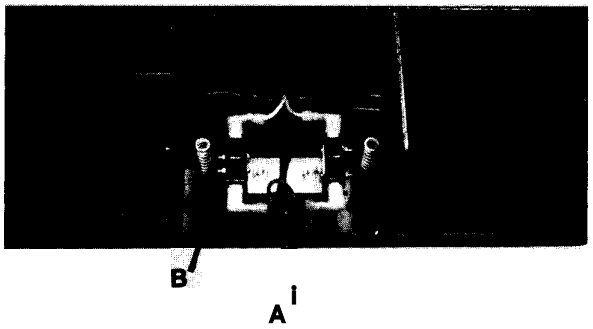


Fig. 34

Removal and Replacement of Footswitch Cord

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud and control enclosure outer shroud. See Removal of Shrouds on Page 7.

2) Remove footswitch from cord. See Removal of Footswitch on Page 23.

3) Remove strain relief bushing, Item C, Fig. 36 from cord by grasping bushing with hand pliers (See Special Tools on Page 35), squeezing tab on bushing, and pulling bushing out of hole in bracket.

4) Lay new footswitch cord along side of defective cord.

5) Remove wires of defective cord from terminals #1 through #6 on PC board and replace with wires of new cord, removing and replacing one wire at a time. See Wiring Diagram on Page 47.

6) Remove (1) #10-24x⅜" screw, Item B, Fig. 36 securing the green grounding wire of defective cord and install on green grounding wire of new cord.

7) Insert new footswitch cord through hole in bracket and install strain relief bushing, Item C, Fig. 36 by placing bushing on cord, closing the bushing, grasping bushing with hand pliers, squeezing the tab on bushing, and pushing the bushing into hole in bracket. See Fig. 36.

8) Install footswitch on cord. See Replacement of Footswitch on Page 23.

9) Replace back shroud and control enclosure outer shroud. See Replacement of Shrouds on Page 7.

Foot Control Switch Adjustment

If, when the foot pedal is depressed, the switch does not actuate (audible click), the "stops" must be adjusted.

1) Disconnect the power cord from the wall receptacle.

2) Loosen lock nut, Item A, Fig. 35 under the malfunctioning switch.

3) While depressing the pedal, use an allen wrench to turn the "stop" counterclockwise until an audible click is heard.

4) After the click is heard, adjust the "stop" an additional ½ turn counterclockwise.

DANGER

DO NOT ADJUST THE STOP MORE THAN AN ADDITIONAL ½ TURN AFTER AUDIBLE CLICK IS HEARD. ADJUSTING THE STOP MORE THAN ½ TURN MAY RESULT IN DAMAGE TO THE SWITCH OR PERSONAL INJURY.

5) While holding the "stop" in position with an allen wrench, tighten the lock nut, Item A, Fig. 35 securely.

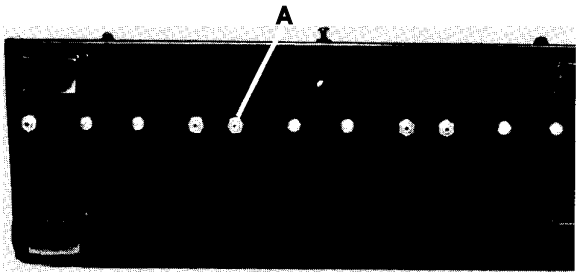


Fig. 35

Return To Table Of Contents

REMOVAL AND REPLACEMENT OF POWER SYSTEM PARTS

Power Cord

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud and control enclosure outer shroud. See Removal of Shrouds on Page 7.

2) Remove strain relief bushing, Item A, Fig. 36 from cord by grasping bushing with hand pliers (See Special Tools on Page 35), squeezing tab on bushing, and pulling bushing out of hole in bracket.

3) Remove the black and white wires of old cord from terminal board noting the position of the wires, and remove (1) screw, Item B, Fig. 36 securing the green grounding wire to the chair base.

4) Remove defective power cord from the chair.

5) Install new power cord in chair by inserting cord through bracket (See Fig. 36), connecting the black and white wires to the terminal board, and installing the (1) #10-24x⅜" self tapping screw, Item B, Fig. 36 through the green grounding wire terminal to secure the ground wire to the chair base. See Wiring Diagram on Page 47.

6) Position strain relief bushing on the cord, close the bushing, grasp bushing with hand pliers squeezing the tab, and push bushing into hole in bracket. See Fig. 36.

7) . Replace back shroud and control enclosure outer shroud. See Replacement of Shrouds on Page 7.

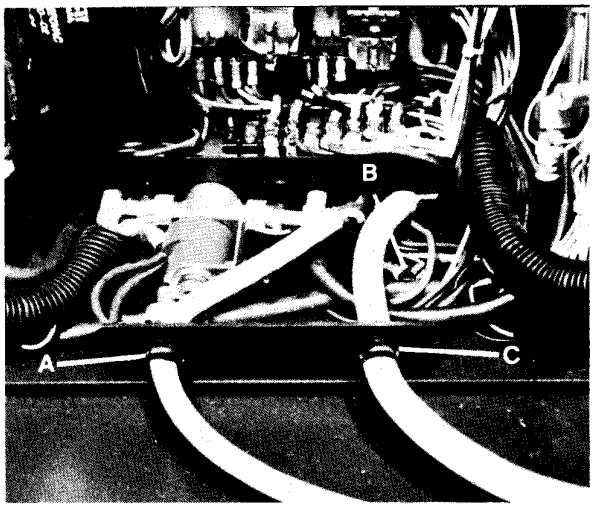


Fig. 38

Base Cylinder Solenoids

The cylinder solenoids are externally mounted on the cylinders and may be removed and replaced without changing the cylinder.

To replace either of the base cylinder solenoids, use the following procedure:

DANGER

WHEN CHANGING A CYLINDER SOLENOID, NOTE HOW THE WIRES, HOSES, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR RESULTING IN ELECTRICAL SHOCK OR EQUIPMENT DAMAGE. See Fig. 28.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY

1) Remove the back shroud and control enclosure outer shroud. See Removal of Shrouds on Page 7.

2) While supporting the cylinder which has the defective solenoid, remove the cotter pin and clevis pin, Item C, Fig. 27 from the rod end of the cylinder and remove the "E"-ring and slide the clevis pin, Item D, Fig. 27 toward the upright at the valve end of the cylinder enabling the cylinder to be moved to gain access to the defective solenoid.

3) Remove defective solenoid, Item A, Fig. 37 from the cylinder by removing the large nut with a ¾" wrench and pulling solenoid off of valve stem.

4) Install new solenoid, Item A, Fig. 37 on cylinder by placing solenoid on valve stem and securing with the large nut.

5) Place cylinder in position and install clevis pin, Item C, Fig. 27 at the rod end of cylinder and install clevis pin, Item D, Fig. 27 and "E"-ring at the valve end of the cylinder.

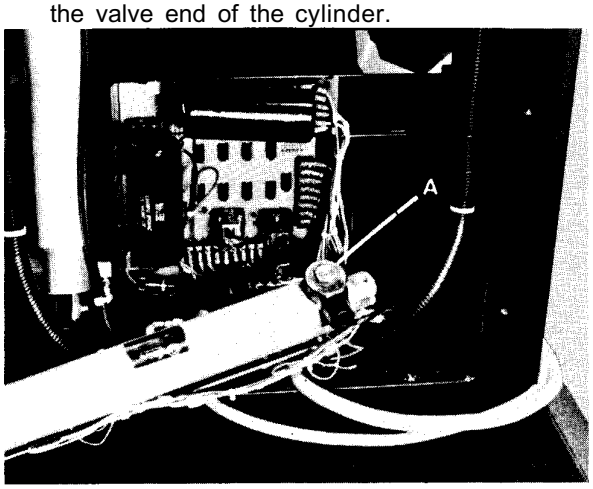


Fig. 37

Return To Table Of Contents

6) Lay cord of new solenoid along side of cord of defective solenoid, removing nylon ties on old cord and replacing the nylon ties on the new cord.

7) Remove old solenoid cord from terminal board and replace with new solenoid cord. See Wiring Diagram on Page 47.

8) Replace control enclosure outer shroud and back shroud. See Replacement of Shrouds on Page 7.

Seat Cylinder Solenoid

The seat cylinder solenoid is externally mounted on the cylinder and may be removed and replaced without changing the cylinder.

To replace the seat cylinder solenoid, use the following procedure:

DANGER

WHEN CHANGING A CYLINDER SOLENOID, NOTE HOW THE WIRES, HOSES, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR RESULTING IN ELECTRICAL SHOCK OR EQUIPMENT DAMAGE. See Fig. 28, 29, 30, & 32

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud, back section cover, seat shroud, and control enclosure outer shroud. See Removal of Shrouds on Page 7.

2) Remove defective solenoid, Item C, Fig. 30 from cylinder by removing the large nut with a ¾" wrench and pulling solenoid off of valve stem.

3) Install new solenoid, Item C, Fig. 30 on cylinder by placing solenoid on valve stem and securing with the large nut.

4) Follow cord of defective solenoid from the cylinder to the terminal board, noting the placement of nylon ties.

5) Lay cord of new solenoid along side of cord of defective solenoid, removing nylon ties on old cord and replacing the nylon ties on the new cord.

6) Remove cord of defective solenoid from the terminal board and from terminal #17 on the PC board and replace with the cord of the new solenoid. See Wiring Diagram on Page 47.

7) Replace back section cover, seat shroud, control enclosure outer shroud, and back shroud. See Replacement of Shrouds on Page 7.

Back Cylinder Solenoid

The back cylinder solenoid is externally mounted on the cylinder and may be removed and replaced without changing the cylinder.

To replace the back cylinder solenoid, use the following procedure:

DANGER

WHEN CHANGING A CYLINDER SOLENOID, NOTE HOW THE WIRES, HOSES, AND NYLON TIES ARE POSITIONED SO THAT THEY MAY BE REPLACED EXACTLY THE SAME WAY OR DAMAGE TO THE WIRES AND HOSES MAY OCCUR RESULTING IN ELECTRICAL SHOCK OR EQUIPMENT DAMAGE. See Fig. 28, 31, & 32.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud, back section cover, and control enclosure outer shroud. See Removal of Shrouds on Page 7.

2) Remove defective solenoid, Item B, Fig. 31 from cylinder by removing the large nut with a ¾" wrench and pulling solenoid off of valve stem.

3) Install new solenoid, Item B, Fig. 31 on cylinder by placing solenoid on valve stem and securing with the large nut.

4) Follow cord of defective solenoid from the cylinder to the terminal board, noting the placement of nylon ties.

5) Lay cord of new solenoid along side of cord of defective solenoid, removing nylon ties on old cord and replacing the nylon ties on the new cord.

6) Remove cord of defective solenoid from the terminal board and from terminal #18 on the PC board and replace with the cord of the new solenoid. See Wiring Diagram on Page 47.

7) Replace back section cover, control enclosure outer shroud, and back shroud. See Replacement of Shrouds on Page 7.

Base Anticavitation Solenoid Valve

The base anticavitation solenoid valve, Item A, Fig. 38 will prevent the base cylinders from extending when the cylinder solenoids are unenergized.

To remove and replace the anticavitation solenoid valve:

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud and control enclosure outer shroud. See Removal of Shrouds on Page 7.

2) Removethe (2) hosefittingsfrom thevalvewith a ½" wrench.

3) Remove the anticavitation solenoid valve from the mounting bracket by removing (2) screws, Item B, Fig. 38.

4) Place new anticavitation solenoid valve in position, align holes, and install (2) #8-32x⅜" screws, Item B, Fig. 38.

5) Install the (2) hose fittings on the new valve using a ½"wrench.

6) Follow the wires of the defective anticavitation solenoid to the terminal board, removing and replacing with the wires of the new anticavitation solenoid.

7) Replace control enclosure outer shroud and back shroud. See Replacement of Shrouds on Page 7.

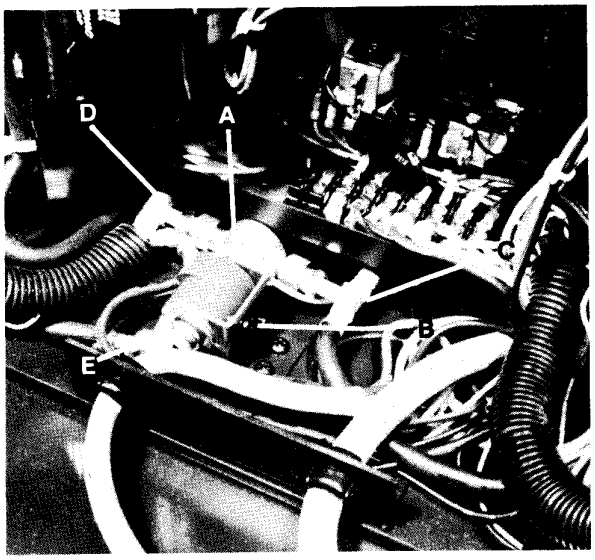


Fig. 38

Back Anticavitation Solenoid Valve

The back anticavitation solenoid valve, Item A, Fig. 32 is located at the rod end of the back cylinder.

If the Model 115 is situated between the chair and table positions, use Procedure #1 to remove and replace the valve.

If the Model 115 is situated between the table and lithotomy positions use Procedure #2 to remove and replace the valve. It is easiest to remove and replace the valve with the Model 115 in a chair position following Procedure #1.

Procedure #1

1) Place the Model 115 in a chair position.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

2) Remove back section cover. See Removal of Shrouds on Page 8.

3) Remove the (5) nylon ties, Item A, Fig. 31.

4) Disconnect the (2) anticavitation solenoid wires by pulling apart the quick-connect wire connectors located at Pt. E, Fig. 31.

5) Remove the solenoid from the valve stem by prying off the small cap, Item C, Fig. 32 on the end of the valve with a screwdriver and pulling the solenoid and bracket off the valve stem.

6) Remove the hose fitting from anticavitation solenoid valve.

7) Remove the valve body from the cylinder.

8) Install new valve body on cylinder and position as shown in Fig. 32. Use pipe sealer on the threads before installing the valve body.

9) Install the hose fitting on the new valve.

10) Replace solenoid and bracket on new valve and secure with the small cap. See Fig. 32.

11) Connect the (2) wires to the solenoid by mating the quick-connect wire connectors located at Pt. E, Fig. 31.

12) Replace the (5) nylon ties, Item A, Fig. 31.

13) Replace back section cover. See Replacement of Shrouds on Page 8.

14) If loss of hydraulic fluid was excessive during repair, oil must be added to the system. Oil level should be checked and oil replenished if required. See Adding Oil to Hydraulic System on Page 15.

Procedure #2

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back section cover. See Removal of Shrouds on Page 8.

2) Remove the (5) nylon ties, Item A, Fig. 31.

Return To Table Of Contents

3) Disconnect the (2) anticavitation solenoid wires by pulling apart the quick-connect wire connectors located at Pt. E, Fig. 31.

4) Remove the solenoid from the valve stem by prying off the small cap, Item C, Fig. 32 on the end of the valve with a screwdriver and pulling the solenoid and bracket off of the valve stem.

5) Remove the hose fitting from theanticavitation solenoid valve.

6) With an assistant supporting the seat section, remove the cotter pin and clevis pin, Item B, Fig. 32 from the rod end of the back cylinder and let the cylinder rest on top of the cross brace.

DANGER

THE ASSISTANT MUST SUPPORT THE SEAT SECTION UNTIL THE BACK CYLINDER IS REATTACHED. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

7) Remove the valve body from the cylinder.

8) Install new valve body on cylinderand position as shown in Fig. 32. Use pipe sealer on the threads before installing the valve body.

9) Reattach the back cylinder by aligning the rod clevis with the clevis block on the pivot frame, enabling the clevis pin, Item B, Fig. 32 to be installed along with the cotter pin.

10) Install the hose fitting on the new valve.

11) Replace solenoid and bracket on new valve and secure with the small cap. See Fig. 32.

12) Connect the (2) wires to thesolenoid by mating the quick-connect wire connectors located at Pt. E, Fig. 31.

13) Replace the (5) nylon ties, Item A, Fig. 31.

14) Replace back section cover. See Replacement of Shrouds on Page 8.

15) If loss of hydraulic fluid was excessive during repair, oil must be added to the system. Oil level should be checked and oil replenished if required. See Adding Oil to Hydraulic System on Page 15.

PC(Printed Circuit) Board

The PC board, Item A, Fig. 39 contains the control circuitry to energize the motor and hydraulic cylinders in the proper sequence when a particular examination position is desired.

To remove and replace the PC board:

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud and control enclosure outer shroud. See Removal of Shrouds on Page 7.

DANGER

WHEN REMOVING THE WIRES FROM THE PC BOARD, NOTE THE POSITION OF THE WIRES SO THAT THEY MAY BE REPLACED ON THE SAME TERMINALS. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

2) Remove all wires from the terminals on the PC board.

3) Remove PC board by removing (4) nuts and (4) lockwashers, Item B, Fig. 39, one nut located at each corner.

4) Place new PC board in position and install (4) #6 lockwashers and (4) #6-32 hex nuts, Item B, Fig. 39.

5) Replace all wires on the terminals on the PC board. See Wiring Diagram on Page 47.

On all Model 115s prior to Serial #39507, a fuse, Item A, Fig. 40 was mounted on the PC board in the lower left-hand corner. On Model 115s from Serial #39507 this fuse was removed from the PC board and replaced with a different style of fuse, Item C, Fig. 39 mounted external to the PC board. When a PC board is replaced on those chairs prior to Serial #39507, this externally mounted fuse must be added to the circuit. A fuse kit, Part No. 002-0020-01, is available from the factory for this installation.

6) Install fuse kit, Part No. 002-0020-01, on those chairs prior to Serial #39507. See Wiring Diagram on Page 47.

7) Replace control enclosure outer shroud and back shroud. See Replacement of Shrouds on Page 7.

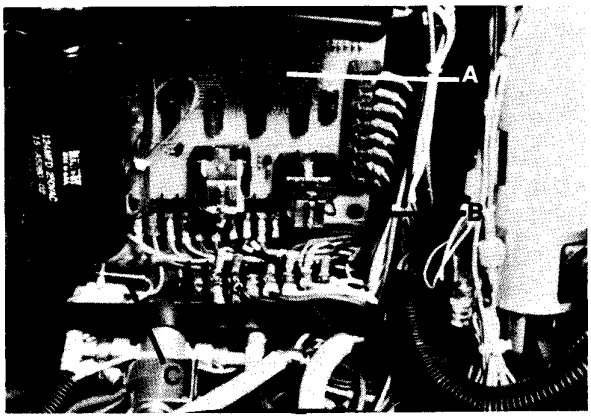


Fig. 39

Return To Table Of Contents

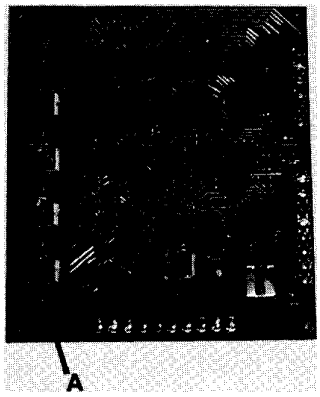


Fig. 40

Fuse

Two types of fuses have been used on the Model 115. One fuse, item A, Fig. 40 was mounted on the PC board. This fuse is a Littelfuse Catalog No. 273003 Microfuse rated at 3 Ampere, 125 VAC. This PC mounted fuse was used on all Model 115s prior to Serial #39507.

The second type of fuse, Item C, Fig. 39 is mounted external to the PC board and is used on those Model 115s from Serial #39507. This fuse is a Littelfuse Catalog No. 31301.5, 3AG "Slo-Blo" rated at 1½ Ampere, 250 VAC.

When the fuse mounted on the PC board requires replacing, it should be replaced with the externally mounted fuse. Two kits are available from the factory for this changeover. One fuse kit, Part No. 002-0020-00, is used when only the PC mounted fuse requires replacing. The second fuse kit, Part No. 002-0020-01, is used when a PC board is replaced on those chairs prior to Serial #39507. Both kits contain all necessary parts and instructions for the changeover.

To replace the fuse mounted external to the PC board.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud. See Removal of Shrouds on Page 7.

2) Grasp each end of the fuseholder, Item C, Fig. 39 with the fingertips, pushing and twisting to separate the ends of the fuseholder.

3) Remove defective fuse and replace with a 3AG "Slo-Blo" rated at 1% Ampere, 250 VAC, Littelfuse Catalog No. 31301.5. This fuse is available from a local automotive or electrical supply house.

DANGER

REPLACE FUSE ONLY WITH THE SAME TYPE AND RATING. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

4) Reassemble fuseholder, Item C, Fig. 39.

5) Replace back shroud. See Replacement of Shrouds on Page 7.

Reed Switches

The reed switches, Item A, Fig. 45are magnetically actuated NO (normally open) switches mounted externally on the cylinder. Magnets mounted on the pistons of the cylinders will close the reed switches when the pistons near the switches. By the states, open or closed, of the reed switches, the control circuitry on the PC board determines the present position of the chair and will actuate relays to energize the motor and hydraulic cylinders in the proper sequence to place the chair in the desired examination position.

To remove and replace a reed switch:

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove the back shroud to gain access to the base clevis, base rod, or tilt rod reed switch. Remove the seat shroud to gain access to the seat rod or seat clevis reed switch. Remove the back section cover to gain access to the back rod or back clevis reed switch. See Removal of Shrouds on Page 7.

2) Unfasten the stainless steel rod on which the defective reed switch is mounted by loosening the (2) set screws, Item G, Fig. 45 with a 1/16" allen wrench. A set screw is located in the standoff at each end of the cylinder.

3) Remove the defective reed switch from the stainless steel rod by loosening the (1) set screw, Item B, Fig. 45 with a 1/16" allen wrench.

4) Remove the defective reed switch from the stainless steel bracket by removing (2) #6-40x¼" screws.

5) Install a new reed switch on the stainless steel bracket by installing (2) #6-40x¼" screws.

4) Place new reed switch on the stainless steel rod and secure in place by tightning the (1) #6-32 set screw, Item B, Fig. 45 with a 1/16" allen wrench. Place the new reed switch in approximately the same position on the rod as was the defective reed switch.

5) Replace the stainless steel rod in the standoffs and secure in place by tightening the (2) #6-32 set screws, Item G, Fig. 45 with a 1/16" allen wrench.

Return To Table Of Contents

6) Separate the quick-connect wire connectors on the leads to the defective reed switch and connect to the leads of the new reed switch.

7) Replace shrouds. See Replacement of Shrouds on Page 7.

8) Check for proper positioning of the reed switches. See Reed Switch Adjustments on Page 32.

Motor Capacitors

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove back shroud. See Removal of Shrouds on Page 7.

2) Remove defective capacitor from its bracket (See Fig. 39). Capacitor is held in place by a protusion on each end of the capacitor engaging in a corresponding slot in the bracket.

3) Remove cap from defective capacitor.

4) Remove the wires from the defective capacitor and install on the new capacitor.

5) Place cap on new capacitor and install capacitor in the bracket, making sure the protusions on each end of the capacitor are fully engaged in the slot in the bracket. See Fig. 39.

6) Replace back shroud. See Replacement of Shrouds on Page 7.

Motor/Pump

The motor/pump is an integral unit and may be removed and replaced as follows:

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove both sections of motor cover, back shroud, and control enclosure outer shroud. See Removal of Motor Cover and Shrouds on Page 7.

2) Remove the (2) motor leads T3 and T2 from terminals #19 and #20, respectively, on the PC board. Remove the (1) motor lead T1 from the terminal board. See Wiring Diagram on Page 47.

3) Remove the capacitors from the brackets and remove the wires from the capacitors. See Removal of Motor Capacitors on Page 30.

4) Remove the (4) hex nuts, Item A, Fig. 41 securing the motor base in place.

5) Remove the acquire hose, Item A, Fig. 42 and return hose, Item B, Fig. 42 from the pump by removing the fittings with a ½" wrench.

6) Tilt motor base on end (toward motorend) and remove the (2) hex bolts securing the motor/pump to the motor base.

7) Loosen the hex nut on the end of the oil reservoir that secures the tank to the motor base.

8) Lift motor/pump off of the motor base and remove from chair.

9) Place new motor/pump on motor base, align holes on the underside, and install (2) ½" lockwashers and (2) ½"-13x1" hex bolts.

NOTE

Be sure the stud on the end of the oil reservoir is in the slot on the end of the motor base.

10) Tighten the hex nut on the end of the oil reservoir to secure the tank to the motor base.

11) Install the acquire hose, Item A, Fig. 42 at the top port of the pump and install the return hose, Item B, Fig. 42 at the bottom port of the pump, tightening the fittings securely with a ½" wrench.

12) Place motor base on shock mounts, align holes, and install (4) ¼" lockwashers and (4) ¼"-20 hex nuts, Item A, Fig. 41.

13) Install capacitor leads on capacitorsand install capacitors in brackets. See Wiring Diagram on Page 47 and Replacement of Capacitors on Page 30.

14) Replace the (2) motor leads T3 and T2 on terminals #19 and #20, respectively, on the PC board. Replace the (1) motor lead T1 on the terminal board. See Wiring Diagram on Page 47.

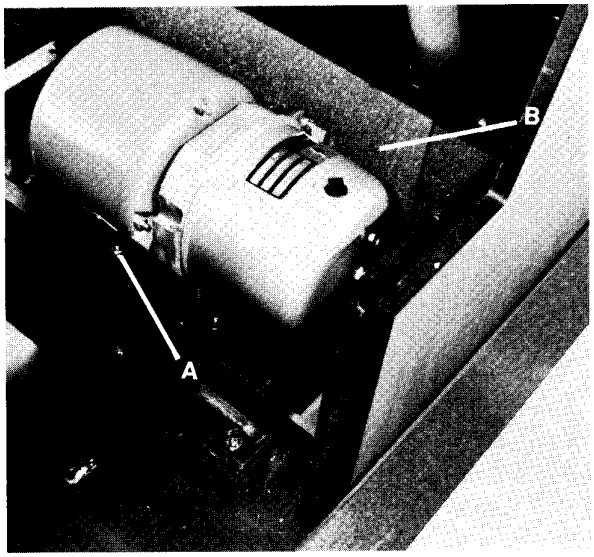


Fig. 41

Return To Table Of Contents

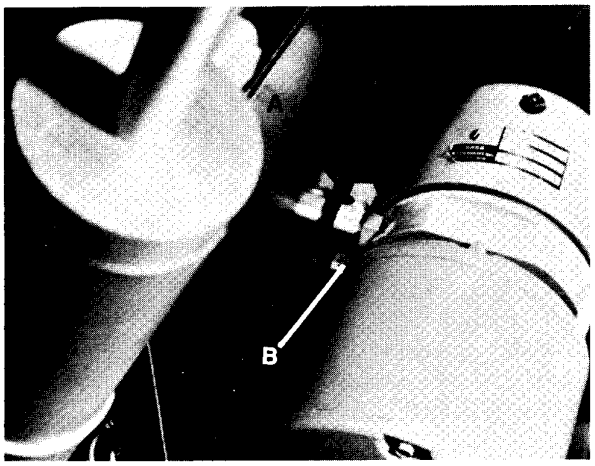


Fig. 42

15) If loss of hydraulic fluid was excessive during repair, oil must be added to the system. Oil level should be checked and oil replenished if required. See Adding Oil to Hydraulic System on Page 15.

16) Replace motor cover, control enclosure outer shroud, and back shroud. See Replacement of Motor Cover and Shrouds on Page 7.

Lights

The light bulbs, lamp number 1142, used in the high intensity, low voltage lamps may be obtained from a local automotive or electrical supply house.

To remove and replace the light bulbs:

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY.

1) Remove the (2) screws, Item A, Fig. 43.

2) Slide lamp assembly out of recess approximately ½" and remove the clear lamp cover.

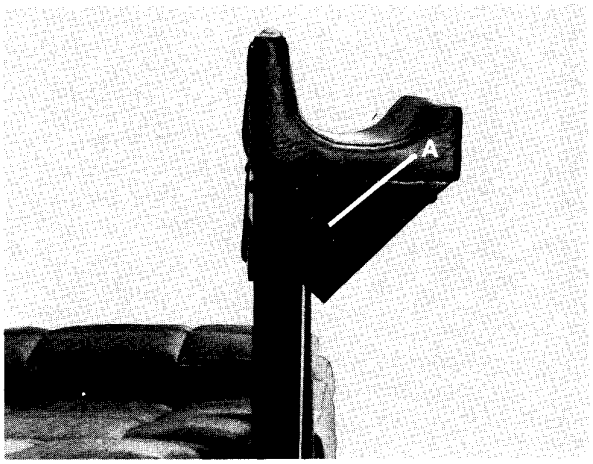


Fig. 43

3) Remove defective bulb from socket and replace with new bulb, lamp number 1142.

4) Replace clear lamp cover and slide lamp assembly back into recess.

5) Replace the (2) #10-32x⅜" screws, Item A, Fig. 43.

Transformer

The transformer, Item A, Fig. 44 steps the 120 VAC line voltage down to 12.6 VAC. The 12.6 VAC is the supply voltage for the illumination lights recessed into each leg support and the PC board.

DANGER

DISCONNECT POWER CORD FROM WALL RECEPTACLE. FAILURE TO DISCONNECT POWER CORD COULD RESULT IN PERSONAL INJURY

1) Remove motor cover, back shroud and control enclosure outer shroud. See Removal of Motor Cover and Shrouds on Page 7.

2) Remove the (4) screws, Item B, Fig. 44securing the transformer to the chair base.

3) Place new transformer in position, align holes, and install (4) #10-24x⅜" screws, Item B, Fig. 44.

4) Lay leads of new transformer along side of leads of defective transformer.

5) Remove leads of defective transformer from terminal board and terminal #22 on PC board and replace with leads of new transformer, removing and replacing one lead at a time. See Wiring Diagram on Page 47.

6) Remove defective transformer from the chair.

7) Replace control enclosure outer shroud, back shroud, and motor cover. See Replacement of Motor Cover and Shrouds on Page 7.

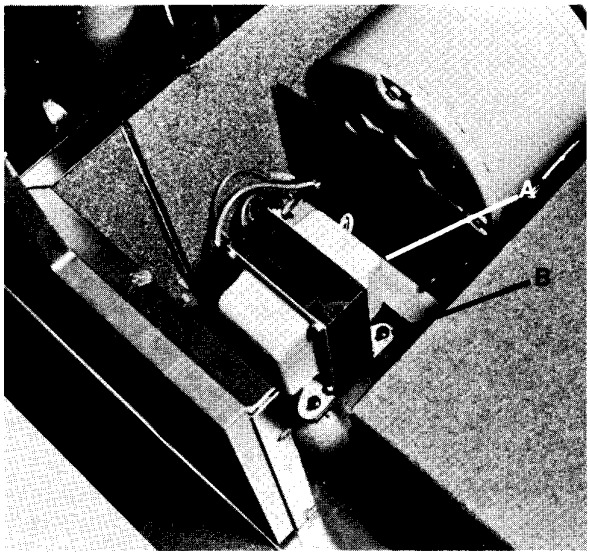


Fig. 44

Return To Table Of Contents

REED SWITCH ADJUSTMENTS

The reed switches must be properly positioned in order to attain the correct placement of the movable chair sections.

Base Cylinder Switches

There are three reed switches mounted on the right-hand base cylinder. The base clevis reed switch, Item A, Fig. 45 is set so that the base cylinders stop retracting when a chair position is achieved. The base rod reed switch, Item C, Fig. 45 is set so that the base cylinders stop extending when the back section is horizontal as shown in Fig. 46. The tilt rod reed switch, Item E, Fig. 45 is set so that the base cylinders stop retracting when the back section is horizontal when returning from a tilted position.

To adjust the base cylinder reed switches:

DANGER

FAILURE TO ADJUST THE REED SWITCHES AS DESCRIBED COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

1) Remove back shroud. See Removal of Shrouds on Page 7.

2) Starting from a chair position, depress the "Table Acquire" foot control switch until the base cylinders stop extending and the seat section begins to rotate downward. The back section should be horizontal as shown in Fig. 46. If the back section is not horizontal, adjust the base rod reed switch, Item C, Fig. 45 by loosening the (1) #6-32 set screw, Item D, Fig. 45 with a 1/16" allen wrench and sliding the reed switch up or down on the stainless steel rod.

Should the base cylinders stop extending before the back section is horizontal, slide the reed switch toward the rod end of thecylinder. Should the base cylinders stop extending after the back section passes the horizontal position, slide the reed switch away from the rod end of the cylinder and toward the valve end of the cylinder.

After adjusting the position of the reed switch, lock the switch in position by tightening the (1) #6-32 set screw, Item D, Fig. 45 with a 1/16" allen wrench.

3) Place the Model 115 in a Trendelenberg position by first depressing the "Table Acquire" foot control switch until the table position is achieved and then depressing the "Pelvic Tilt Up" foot control switch until the maximum tilt is achieved and the chair stops moving.

Depress the "Pelvic Tilt Down" foot control switch until the chair stops moving and the motor shuts off. The back section should be horizontal as shown in Fig. 49. If the back section is not horizontal, adjust the tilt rod reed switch, Item E, Fig. 45 by loosening the (1) #6-32 set screw, Item F, Fig. 45 with a 1/16" allen wrench and sliding the reed switch and bracket up or down on the stainless steel rod.

Should the base cylinders stop retracting before the back section reaches the horizontal position, slide the reed switch toward the valve end of the cylinder. Should the base cylinders, stop retracting after the back section passes the horizontal position, slide the reed switch toward the rod end of the cylinder.

After adjusting the position of the reed switch, lock the switch in position by tightening the (1) #6-32 set screw, Item F, Fig. 45 with a 1/16" allen wrench.

4) Starting from a table position, depress the "Table Return" foot control switch until the chair postion is achieved. The motor should shut off and the back edge of the leg support should be parallel with the chair panel as shown in Fig. 47. If the motor does not shut off or the back edge of the leg support is not parallel with the chair panel, adjust the base clevis reed switch, Item A, Fig. 45 by loosening the (1) #6-32 set screw, Item B, Fig. 45 with a 1/16" allen wrench and sliding the reed switch up or down on the stainless steel rod.

Should the base cylinders stop retracting and the motor shut off before the leg support is parallel with the chair panel, slide the reed switch toward the valve end of the cylinder. Should the base cylinders stop retracting or the motor continue to run after the leg support passes a parallel position with the chair panel, slide the reed switch toward the rod end of the cylinder.

After adjusting the position of the reed switch, lock the switch in position by tightening the (1) #6-32 set screw, Item B, Fig. 45 with a 1/16" allen wrench.

5) Replace the back shroud. See Replacement of Shrouds on Page 7.

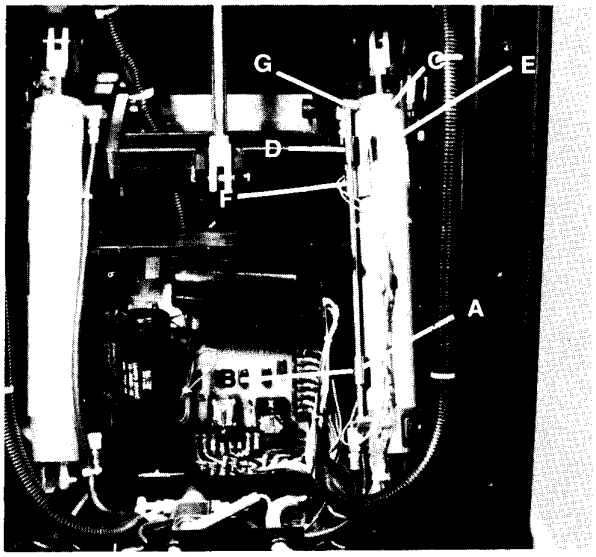


Fig. 45

Return To Table Of Contents

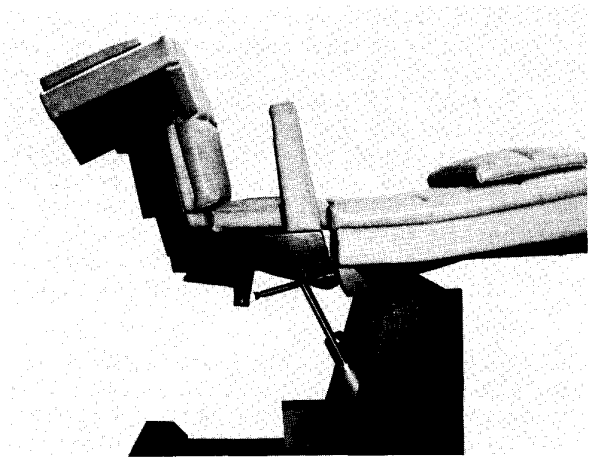


Fig. 46

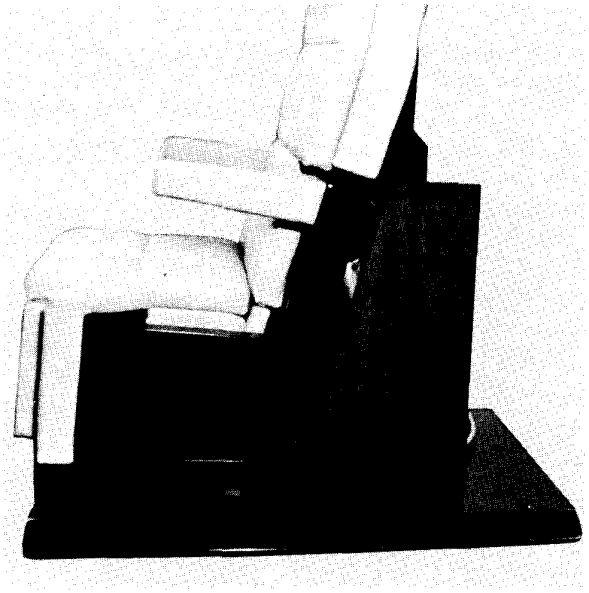


Fig. 47

Seat Cylinder Switches

There are two reed switches mounted on the seat cylinder. The seat clevis reed switch, Item C, Fig. 48 is set so that the seat cylinder will stop retracting when the seat section is parallel and level with the back section in a table position. The seat rod reed switch, Item A. Fig. 48 is set so that the seat cylinder will stop extending when the seat section is parallel with the leg support as shown in Fig. 46.

To adjust the seat cylinder reed switches:

DANGER

FAILURE TO ADJUST THE REED SWITCHES AS DESCRIBED COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

1) Remove seat shroud. See Removal of Shrouds on Page 8.

2) Starting from a chair position, depress the "Table Acquire" foot control switch until the table position is achieved. The motor should shut off and the seat section should be horizontal and level with the back section as shown in Fig. 49. If the motor does not shut off or the seat section is not horizontal, adjust the seat clevis reed switch, Item C, Fig. 48 by loosening the (1) #6-32 set screw, Item D, Fig. 46 with a 1/16" allen wrench and sliding the reed switch up or down on the stainless steel rod.

Should the seat cylinder stop retracting and the motor shuts off before the seat section reaches the horizontal position, slide the reed switch toward the valve end of the cylinder. Should the seat cylinder stop retracting after the seat section passes the horizontal position or the motor continues to run, slide the reed switch toward the rod end of the cylinder.

After adjusting the position of the reed switch, lock the switch in position by tightening the (1) #6-32 set screw, Item D, Fig. 48 with a 1/16" allen wrench.

3) Starting from a table position, depress the "Table Return" foot control switch until the seat section stops rotating upward. The seat section should be parallel with the leg supports as shown in Fig. 46. If the seat section is not parallel with the leg supports or the back section does not begin to move after the seat section stops rotating upward, adjust the seat rod reed switch, Item A, Fig. 48 by loosening the (1) #6-32 set screw, Item B, Fig. 48 with a 1/16" allen wrench and sliding the reed switch up or down on the stainless steel rod.

Should the seat cylinder stop extending before the seat section is parallel with the leg supports, slide the reed switch toward the rod end of the cylinder. Should the seat cylinder stop extending after the seat section passes the parallel position with the leg supports or the back section does not begin to move when the seat section stops rotating upward, slide the reed switch toward the valve end of the cylinder.

After adjusting the position of the reedswitch, lock the switch in position by tightening the (1) #6-32 set screw, Item B, Fig. 48 with a 1/16" allen wrench.

4) Replace the seat shroud. See Replacement of Shrouds on Page 8.

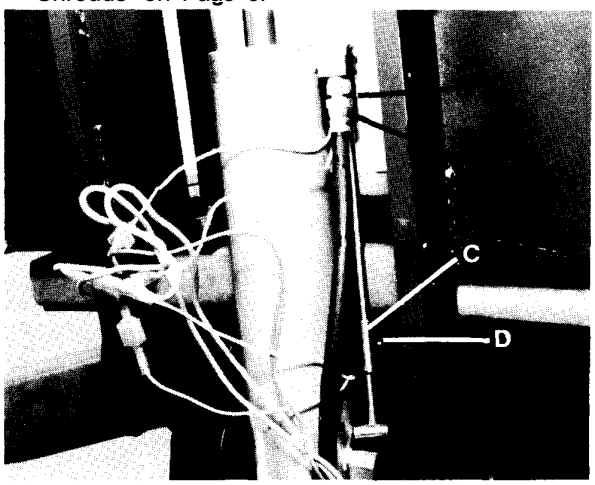


Fig. 48

Return To Table Of Contents

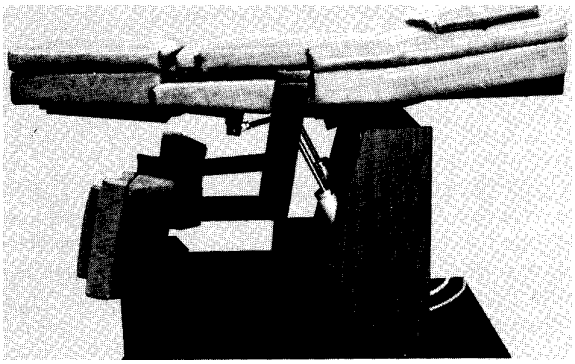


Fig. 49

Back Cylinder Switches

There are two reed switches mounted on the back cylinder. The back clevis reed switch, Item C, Fig. 50 is set so that the back cylinder will stop retracting when the seat section has rotated downward and is perpendicular to the floor as shown in Fig. 51. The back rod reed switch, Item A, Fig. 50 is set so that the back cylinder will stop extending when the seat section is parallel and level with the back section when attaining the table position from a lithotomy position.

To adjust the back cylinder reed switches:

DANGER

FAILURE TO ADJUST THE REED SWITCHES AS DESCRIBED COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

1) Remove the back section cover. See Removal of Shrouds on Page 8.

2) Place the Model 115 in a lithotomy position by depressing the "Lithotomy Acquire" foot control switch until the lithotomy position is achieved. The motor should shut off and the seat section should be perpendicular to the floor as shown in Fig. 51. If the motor does not shut off or the seat section is not perpendicular, adjust the back clevis reed switch, Item C, Fig. 50 by loosening the (1) #6-32 set screw, Item D, Fig. 50 with a 1/16" allen wrench and sliding the reed switch up or down on the stainless steel rod.

Should the back cylinder stop retracting before the seat section reaches the perpendicular position, slide the reed switch toward the valve end of the cylinder. Should the back cylinder stop retracting after the seat section passes the perpendicular position or the motor continues to run, slide the reed switch toward the rod end of the cylinder.

After adjusting the position of the reed switch, lock the switch in position by tightening the (1) #6-32 set screw, Item D, Fig. 50with a 1/16" allen wrench.

3) Starting from the lithotomy position, depress the "Table Acquire" foot control switch until the table position is achieved. The motor should shut off and the seat section should be horizontal and level with the back section as shown in Fig. 49. If the motor does not shut off or the seat section is not horizontal, adjust the back rod reed switch, Item A, Fig. 50 by loosening the (1) #6-32 set screw, Item B, Fig. 50 with a 1/16" allen wrench and sliding the reed switch up or down on the stainless steel rod.

Should the back cylinder stop extending before the seat section reaches the horizontal position, slide the reed switch toward the rod end of the cylinder. Should the back cylinder stop extending after the seat section passes the horizontal position or the motor continues to run, slide the reed switch toward the valve end of the cylinder.

After adjusting the position of the reed switch, lock the switch in position by tightening the (1) #6-32 set screw, Item B, Fig. 50 with a 1/16" allen wrench.

4) Replace the back section cover. See Replacement of Shrouds on Page 8.

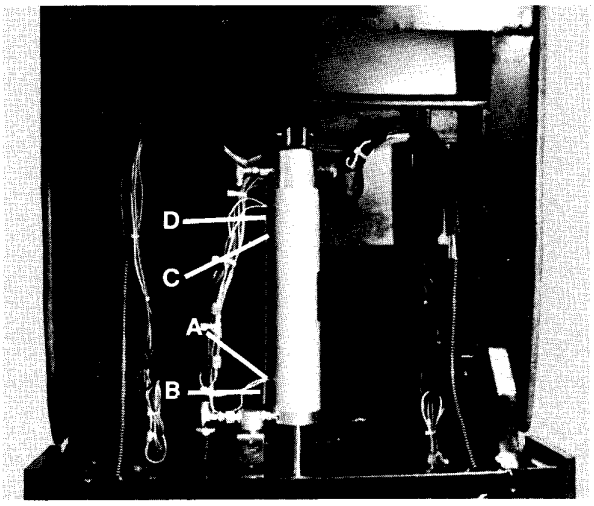


Fig. 50

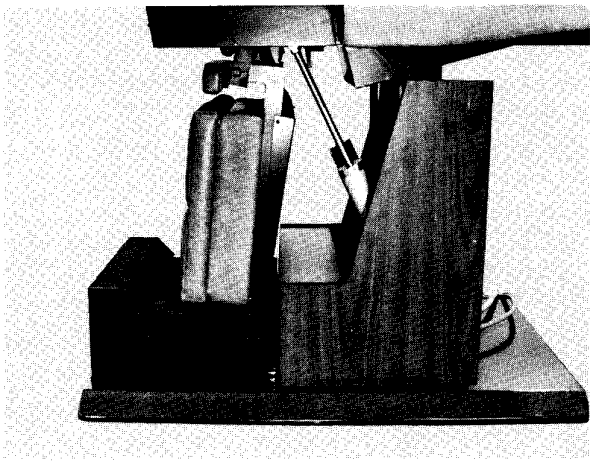


Fig. 51

Return To Table Of Contents

Special Tools

1) Hand pliers (Fig. 52) are used to remove and install the strain relief bushings. These pliers are manufactured by Heyman Manufacturing Co. and are available through their sales office in Waukesha, Wisconsin. When ordering, specify No. 29 Hand Pliers, Heyco Part #0022.

2) Prop (Fig. 53) is used when removing the motor cover with the Model 115 in a chair position. (See Fig. 20) This prop, Part No. 029-0304-00, is available from the factory.

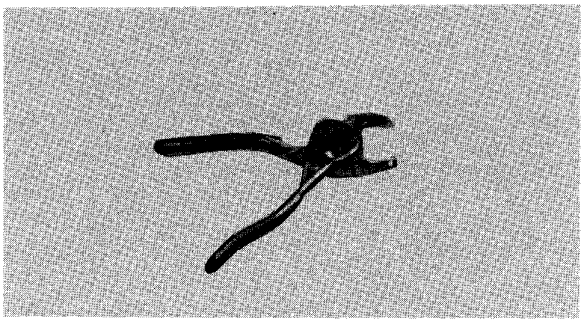


Fig. 52

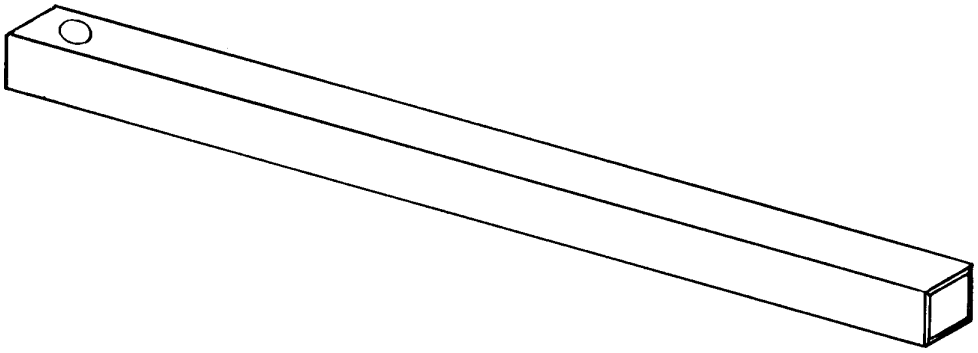


Fig. 53

Return To Table Of Contents

TROUBLESHOOTING GUIDES

Mechanical

Problem	Symptom	Probable Cause	Check	Correction
Leg support assembly.	Difficult to latch or unlatch.	Leg suppport lock assembly or latch pin misadjusted.	Check for proper engagement of latch pin with lock. See Fig. 22.	Adjust position of lock assembly and latch pin. See Leg Support Latch Adjustment on Page 13.
	Excessive sideways play of integral leg support and armrest.	Insufficient spacer washers on leg support pivot.	Check for spacer washers, Item E, Fig. 22 on leg support pivot.	Add spacer washers to leg support pivot. See Removal & Replacement of Leg Supports on Page 12.
	Leg support upholstered section 10 "toes-in" or hits step.	Roll pin, Item B, Fig. bent or sheared off.	Inspect roll pin.	Replace roll pin.
	Leg support upholstered section "wobbly".	Pivot, Item A, Fig. 5 oose.	Check pivot for tightness.	Tighten pivot. See Item #8 of Periodic Inspection Procedures on Page 4.
	Leg support upholstered section 10 "droops".	Spring, Item C, Fig. broke or detached.	Inspect spring.	Replace or reattach spring.
Paper roll cover.	Cover difficult to latch or unlatch.	Cover bent or hinges misaligned.	Inspect cover and hinge alignment.	Straighten cover and/or adjust hinges. Replace cover.
Seat section hits front step when rotating downward to a lithotomy position.	Same.	Reed switches misadjusted..	Check reed switch adjustment. See Reed Switch Adjustments on Page 32.	Adjust position of reed switches.
Patients footstep hard to extend or retract or hits chair panels.	Same.	Footstep misadjusted or nylo tape has loosened and is restricting movement.	Inspect nylo tape.	Replace nylo tape and/or adjust footstep. See Adjustment of Patient's Footstep on Page 14.
Footrest extension	Difficult to extend or retract.	Nylo tape has loosened and is restricting movement.	Remove footrest extension and inspect nylo tape located inside seat section. See Removal & Replacement of Footrest Extension on Page 9.	Replace nylo tape.
	Release lever won't latch and lock the footrest extension in the storage position.	Release lever loose or catch, Item D, Fig. 17 bent.	Inspect release lever and catch.	Adjust catch if bent. Replace footrest extension if release lever is loose. See Removal & Replacement of Footrest Extension on Page 9.
'Scraping" noise when :he chair is in operation.	"Scraping" noise occurs only when the back section is rotating upward or downward (base cylinders extending or retracting).	Back section pivots loose or misadjusted.	Inspect back section pivots. See Item #5 of Periodic Inspection Procedures on Page 3.	Adjust back section pivots.

Return To Table Of Contents

Problems	Sympton	Probable Cause	Check	Correction
(continued)	"Scraping" noise occurs only when the seat cylinder is extending or retracting.	Seat section pivots loose or misadjusted.	Inspect seat section pivots. See Item #6 of Periodic Inspection Procedures on Page 3.	Adjust seat section pivots.
	"Scraping" noise occurs only when the back cylinder is extending or retracting.	Pivot frame pivots loose or misadjusted.	Inspect pivot frame pivots. See Item #7 of Periodic Inspection Procedures on Page 4.	Adjust pivot frame pivots.
"Squealing" noise when the chair is in operation.	"Squealing" noise when the chair is in operation.	Dry cylinder rod.	Determine which cylinder is extending or retracting when the "squeal"occurs.	Lubricate cylinder rod with a small amount of Vaseline or STP.

Electrical/Hydraulic

A wiring diagram and hydraulicflowdiagram follows this troubleshooting guide and referral to them during troubleshooting will be helpful.

Conditions which could cause improper functioning of the power unit are listed below along with diagnosis and repair procedures.

Before attempting to repair or replace a suspected defective electrical part, check the wiring and wire connections to this part to make sure that all wiring is in good condition and that all connections are tight.

DANGER

DO NOT ATTEMPT ELECTRICAL CONTINUITY CHECKS OR ANY WIRING TEST WITH THE CHAIR PLUGGED INTO THE WALL OUTLET. FAILURE TO DISCONNECT POWER COULD RESULT IN ELECTRICAL SHOCK.

Problem	Symptom	Probable Cause	Check	Correction
When all foot control switches are depressed individually, the chair will not actuate into any position.	Motor does not run, no cylinder solenoid actuation (audible click), and no relay actuation.	Unit not plugged into wall receptacle.	Check	Plug unit into wall receptacle.
		Building fuse blown or defective wall receptacle.	Check building fuse. Check wall receptacle.	Replace building fuse if blown.
		Chair fuse blown.	Check chair fuse. See Wiring Diagram on Page 47.	Replace chair fuse. See Removal & Replacement of Fuse on Page 29.
		Defective power cord.	Check connections and continuity of power cord.	Replace power cord if faulty and/or tighten connections.
		Defective transformer.	Measure secondary voltage of transformer. Should be 12.6 Vrms. See Wiring Diagram on Page 47.	Replace transformer if defective.
		Blue wire of footswitch cord broken or disconnected. Blue jumper wire within footswitch broken or disconnected.	Check continuity of blue wires. Check connectors.	Replace footswitch cord if faulty. Replace blue jumper wire in footswitch if faulty.
		Defective PC board.	If above checks O.K.	Replace PC board.

Return To Table Of Contents

Problems	Symptom.	Probable Cause	Check	Correction
continued)	Motor does not run but relay CR4 actuates when "Lithotomy Acquire" foot control switch is depressed (except when in a lithotomy position) and relay CR5 actuates when "Lithotomy Return" foot control switch is depressed (except when in a chair position).	Capacitor burned out or loose terminals.	Check terminals.	Replace defective capacitor and/or tighten connections.
		Motor thermal overload switch on.	Allow motor to cool and recheck.	Do not run motor continuously.
	Motor does not run, relay CR4 does not actuate when "Lithotomy Acquire" foot control switch is depressed, and relay CR5 does not actuate when "Lithotomy Return" foot control switch is depressed but either relay CR1, CR2, or CR3 actuates.	Defective PC board.	Check relay operation.	Replace PC board.
	Motor runs but neither relay CR1, CR2, nor CR3 actuates.	Defective PC board.	Check relay operation.	Replace PC board.
	Motor runs and relay CR1 actuates.	Defective wiring or loose connections.	Check continuity of wires from terminal #16 on the PC board to the base cylinder solenoids. Check connections. See Wiring Diagram on Page 47.	Replace defective jumper wire and/or tighten connections.
		Defective base anticavitation solenoid valve.	Pressure will be apparent in the return hose, Item D, Fig. 38 and should be apparent in the base return hose, Item C, Fig. 38 when the "Lithotomy Return" foot control switch is depressed. Check for slight magnetism at small cap, Item E, Fig. 38 on end of base anticavitation solenoid when the "Lithotomy Return" foot control switch is depressed.	Replace base anticavitation solenoid valve if faulty.
		Low on hydraulic oil.	Check oil level.	Add oil if necessary. See Adding Oil to Hydraulic System on Page 15.
		Defective pump.	Pressure should be apparent in theacquire hose, Item A, Fig. 42 when the "Lithotomy Acquire" foot control switch is depressed. Pressure should be apparent in the return hose, Item B, Fig. 42 when the "Lithotomy Return" foot control switch is depressed.	Replace motor/pump if no pressure is apparent.

Return To Table Of Contents

Problems	Symptom	Probable Cause	Check	Correction
(continued)	Motor runs and relay CR2 actuates.	Defective seat cylinder solenoid.	Check for slight magnetism at large nut on end of seat cylinder solenoid Item C, Fig. 30 when the "Lithotomy Return" foot control switch is depressed.	Replace seat cylinder solenoid if faulty.
		Low on hydraulic oil.	Check oil level:	Add oil if necessary. See Adding Oil to Hydraulic System on Page 15.
		Defective pump.	Pressure should be apparent in theacquire hose, Item A, Fig. 42 when the "Lithotomy Acquire" foot control switch is depressed. Pressure should be apparent in the return hose, Item B, Fig. 42 when the "Lithotomy Return" foot control switch is depressed.	Replace motor/pump if no pressure is apparent.
		Defective seat cylinder	If above checks O.K.	Replace seat cylinder.
	Motor runs and relay CR3 actuates.	Defective back cylinder solenoid.	Check for slight magnetism at large nut on end of back cylinder solenoid, Item B, Fig. 31 when the "Lithotomy Acquire" or "Lithotomy Return" foot control switch is depressed.	Replace back cylinder solenoid if faulty.
		Defective back anti-cavitation solenoid.	Check for slight magnetism at small cap, Item C, Fig. 32 on end of back anticavitation solenoid valve when the "Lithotomy Acquire" or "Lithotomy Return" foot control switch is depressed.	Replace back anti-cavitation solenoid if faulty.
		Low on hydraulic oil.	Check oil level.	Add oil if necessary. See Adding Oil to Hydraulic System on Page 15.
		Defective pump.	Pressure should be apparent in theacquire hose, Item A, Fig. 42 when the "Lithotomy Acquire" foot control switch is depressed. Pressure should be apparent in the return hose, Item B, Fig. 42 when the "Lithotomy Return" foot control switch is depressed.	Replace motor/pump if no pressure is apparent.
		Defective back cylinder and attached back cylinder anticavitation solenoid valve.	If above checks O.K.	Replace back cylinder and attached back cylinder anticavitation solenoid valve.

Return To Table Of Contents

Problem:	Symptom	Probable Cause	Check	Correction
When all foot control switches are depressed individually, "Lithotomy Acquire" does not function. Ail other switches function properly.	Motor does not run, no cylinder solenoid actuation (audible click) and no relay actuation.	Footswitch out of adjustment.	Depress "Lithotomy Acquire" footswitch pedal and listen for audible click of microswitch.	Adjust footswitch if no audible click.
		Defective microswitch in footswitch control.	Check continuity of microswitch in on and off positions.	Replace microswitch if continuity does not conform to wiring diagram.
		Red wire of footswitch cord broken or disconnected or red wire within footswitch broken or disconnected.	Check continuity of red wires. Check connectors.	Replace footswitch cord if faulty Replace red jumper wire in footswitch if faulty. Tighten connections.
		Defective PC board	If above checks O.K.	Replace PC board.
	Motor does not run but either relay CR1, CR2, or CR3 actuates.	Defective PC board	Check relay operation.	Replace PC board.
	Motor runs but neither relay CR1, CR2, nor CR3 actuates.	Defective PC board.	Check relay operation.	Replace PC board.
When all foot control switches are depressed individually, "Lithotomy Return" does not function. All other switches function properly.	Motor does not run, no cylinder solenoid actuation (audible click), and no relay actuation.	Footswitch out of adjustment.	Depress "Lithotomy Return" footswitch pedal and listen for audible click of microswitch.	Adjust footswitch ii no audible click.
		Defective microswitch in footswitch control.	Check continuity of microswitch in on an off positions.	Replace microswitch if continuity does not conform to wiring diagram.
		Black wire within footswitch broken or disconnected.	Check continuity of black wire. Checkconnectors.	Replace black jumper wire in footswitch if faulty. Tighten connections.
When ail foot control switches are depressed individually, "Table Acquire" does not function. All other switches function properly.	Motor does not run, no cylinder solenoid actuation (audible click), and no relay actuation.	Footswitch out of adjustment.	Depress "Table Acquire"footswitch pedal and listen for audible click of microswitch.	Adjust footswitch if no audible click.
		Defective microswitch in footswitch control.	Check continuity of microswitch in on and off positions.	Replace microswitch if continuity does not conform to wiring diagram.
		White wire of footswitch cord broken or disconnected or white wire within footswitch broken or disconnected.	Check continuity of white wires. Check connectors.	Replace footswitch cord if faulty. Replace white jumper wire in footswitch if faulty. Tighten connections.
		Defective PC board.	If above checks O.K.	Replace PC board.
	Motor does not run but either relay CR1, CR2, or CR3 actuates.	Defective PC board.	Check relay operation.	Replace PC board.
	Motor runs but neither relay CR1, CR2, or CR3 actuates.	Defective PC board.	Check relay operation.	Replace PC board.

Return To Table Of Contents

Problem	Symptom	Probable Cause	Check	Correction
When all foot control switches are depressed individually, "Table Return" does not function. All other switches function properly.	Motor does not run, no cylinder solenoid actuation (audible click), and no relay actuation.	Footswitch out of adjustment.	Depress "Table Return" footswitch pedal and listen for audible click of microswitch.	Adjust footswitch if no audible click.
		Defective microswitch in footswitch control.	Check continuity of microswitch in on and off positions.	Replace microswitch if continuity does not conform to wiring diagram.
		Black wire within footswitch broken or disconnected.	Check continuity of black wire. Check connectors.	Replace black jumper wire in footswitch if faulty. Tighten Connections.
When all foot control switches are depressed individually, "Lithotomy Return" and "Table Return" do not function. All other switches function properly.	Motor does not run, cylinder solenoid actuation (audible click) and no relay actuation.	no Black wire of footswitch cord broken or disconnected or black wire within footswitch broken or disconnected.	Check continuity of black wires. Check connectors.	Replace footswitch cord if faulty. Replace black jumper wire in footswitch if faulty. Tighten connections.
		Defective PC board.	If above checks O.K.	Replace PC board.
	Motor does not run but either relay CR1, CR2, or CR3 actuates.	Defective PC board.	Check relay operation.	Replace PC board.
	Motor runs but neither relay CR1, CR2, nor CR3 actuates.	Defective PC board.	Check relay operation.	Replace PC board.
	Motor runs and either relay CR1, CR2, or CR3 actuates.	Defective Pump.	Pressure will be apparent in the acquire hose, Item A, Fig. 42 when the "Lithotomy Acquire" foot control switch is depressed. Pressure should be apparent in the return hose, Item B, Fig. 42 when the "Lithotomy Return" foot control switch is depressed.	Replace motor/pump if no pressureisappareni n return hose.
When all foot control switches are depressed individually, 'Lithotomy Acquire" and and Table Acquire" do not function. 'Lithotomy Return" and "Table Return" or function properly.	Motor does not run, no cylinder solenoid actuation (audible click), and no relay actuation.	Defective PC board.	Check relay operation.	Replace PC board
	Motor does not run but either relay CR1, CR2, or CR3 actuates.	Defective PC board.	Check relay operation.	Replace PC board.
	Motor runs but neither relay CR1, CR2, nor CR3 actuates.	Defective PC board.	Check relay operation.	Replace PC board.
	Motor runs and either relay CR1, CR2, or CR3 actuates.	Defective pump.	Pressure will be apparent in the return hose, Item B, Fig. 42 when the "Lithotomy Return" foot control switch is depressed. Pressure should be apparent in the acquire hose, Item A, Fig. 42 when the "Lithotomy Acquire" foot control switch is depressed.	Replace motor/pump if no pressureisapparent in acquire hose.

Return To Table Of Contents

Problem	Symptom	Probable Cause	Check	Correction
When all foot control switches are depressed individually, "Pelvic Tilt Up" does not function when in a table or lithotomy position. All other switches function properly.	Motor does not run, base cylinder solenoids do not actuate (audible click), and no relay actuation.	Footswitch out of adjustment.	Depress "Pelvic Tilt Up" footswitch pedal and listen for audible click of microswitch.	Adjust footswitch if no audible click.
		Defective microswitch in footswitch control.	Check continuity of microswitch in on and off positions.	Replace microswitch if continuity does not conform to wiring diagram.
		White/Black wire of footswitch cord broken or disconnected or white/black wire within footswitch broken or disconnected.	Check continuity of white/black wires. Check connectors.	Replace footswitch cord if faulty. Replace white/-black jumper wire.
		Defective PC board.	If above checks O.K.	Replace PC board.
	Motor does not run but relay CR1 actuates and base cylinder solenoids actuate (audible click).	Defective PC board.	Check relay operation.	Replace PC board.
	Motor runs but relay CR1 does not actuate.	Defective PC board.	Check relay operations.	Replace PC board.
When all foot control switches are depressed individually, "Pelvic Tilt Down" does not function when in a tilted position. All other switches function properly.	Motor does not run, base cylinder solenoids do not actuate (audible click), and no relay actuation.	Footswitch out of adjustment.	Depress "Pelvic Tilt Down" footswitch pedal and listen for audible click of microswitch.	Adjust footswitch if no audible click.
		Defective microswitch in footswitch control.	Check continuity of microswitch in on and off positions.	Replace microswitch if continuity does not conform to wiring diagram.
		White wire of footswitch cord broken or disconnected or white wire within footswitch broken or disconnected.	Check continuity of white wires. Check connectors.	Replace footswitch cord if faulty. Replace white jumper wire in footswitch if faulty. Tighten connections.
		Tilt rod reed switch misadjusted or defective.	Check adjustment of reed switch. Check continuity of reed switch.	Replace defective reed switch. Reposition reed switch.
		Defective PC board.	If above check O.K.	Replace PC board.
	Motor does not run but relay CR1 actuates and base cylinder solenoids actuate (audible click).	Defective PC board.	Check relay operation.	Replace PC board.
	Motor runs but relay CR1 does not actuate.	Defective PC board.	Check relay operation.	Replace PC board.
From a chair position, when depressing the 'Table Acquire" or 'Lithotomy Acquire" foot control switch, the back section rotates upward and stops but the seat will not rotate downward.	Motor continues to run but seat does not move and relay CR2 does not actuate.	Base rod reed switch misadjusted or defective.	Check adjustment of reed switch. Check continuity of reed switch. Reed switch should be closed when the back section is horizontal.	Reposition reed switch. Replace defective reed switch.

Return To Table Of Contents

Problem	Symptom	Probable Cause	Check	Correction
(continued)		Defective PC board.	If above checks O.K.	Replace PC board.
	Motor continues to run and relay CR2 actuates but seat does not move.	Defective seat cylinder solenoid.	Check for slight magnetism at large nut on end of seat cylinder solenoid, Item C, Fig. 30.	Replace seat cylinder solenoid if faulty.
		Defective seat cylinder.	If above checks O.K.	Replace seat cylinder.
	Motor shuts off and relay CR2 may or may not actuate.	Defective PC board.	Check relay operation.	Replace PC board.
From a chair position, when depressing the "Table Acquire" foot control switch the Model 115 stops in a table position but the motor continues to run.	Motor does not shut off when a table position is achieved.	Seat clevis reed switch misadjusted or defective.	Check adjustment of reed switch. Check continuity of reed switch. Reed switch should be closed when the table position is achieved.	Reposition reed switch. Replace defective reed switch.
		Defective PC board.	If above checks O.K.	Replace PC board.
From a chair position, when depressing the "Lithotomy Acquire" foot control switch, the Model 115 stops in a table position.	Motor continues to run but seat does not rotate downward and relay CR3 does not actuate.	Seat clevis reed switch misadjusted or defective.	Check adjustment of reed switch. Check continuity of reed switch. Reed switch should be closed when the table position is achieved.	Reposition reed switch. Replace defective reed switch.
		Defective PC board.	If above checks O.K.	Replace PC board.
	Motor continues to run and relay CR3 actuates but seat does not move.	Defective back cylinder solenoid.	Check for slight magnetism at large nut on end of back cylinder solenoid, Item B, Fig. 31.	Replace back cylinder solenoid if faulty.
		Defective back anticavitation solenoid valve solenoid.	Check for slight magnetism at small cap, Item C, Fig. 32 on end of back anticavitation solenoid valve.	Replace back anticavitation solenoid valve solenoid if faulty.
		Defective back cylinder and/or back cylinder anticavitation solenoid valve.	If above checks O.K.	Replace back cylinder and attached back cylinder anticavitation solenoid valve.
	Motor shuts off and relay CR3 may or may not actuate.	Defective PC board.	Check relay operation.	Replace PC board.
When depressing the "Lithotomy Acquire" foot control switch the Model 115 stops in a lithotomy position but the motor continues to run.	Motor does not shut off when lithotomy position is achieved.	Back clevis reed switch misadjusted or defective.	Check adjustment of reed switch. Check continuity of reed switch. Reed switch should be closed when the lithotomy position is achieved.	Reposition reed switch. Replace defective reed switch.
		Defective PC board.	If above checks O.K.	Replace PC board.
From a lithotomy position, when depressing the "Lithotomy Return" or "Table Return" foot control switch, the seat rotates upward to a table position and stops moving.	Motor continues to run but seat does not continue to rotate upward and relay CR2 does not actuate.	Back rod reed switch misadjusted or defective.	Check adjustment of reed switch. Check continuity of reed switch. Reed switch should be closed when the table position is achieved.	Reposition reed switch. Replace defective reed switch.

Return To Table Of Contents

Problem	Symptom	Probable Cause	Check	Correction
(continued)		Defective PC board.	If above checks O.K.	Replace PC board.
	Motorcontinuestorun and relay CR2 actuates but seat does not move.	Defective seat cylinder solenoid.	Check for slight magnetism at large nut on end of seat cylinder solenoid, Item C, Fig. 30.	Replace seat cylinder solenoid if faculty.
		Defective seat cylinder.	If above checks O.K.	Replace seat cylinder.
	Motor shuts off and relay CR2 may or may not actuate.	Defective PC board.	Check relay operation.	Replace PC board.
From a table position, vhen depressing the 'Table Return" or 'Lithotomy Return" oot control switch, the seat rotates upward to l vertical position and stops but the back will rot rotate downward.	Motor continues to run but back section does not move and relay CR1 does not actuate.	Seat rod reed switch misadjusted or defective.	Check adjustment of reed switch. Check switch. Replace de- continuity of reed fective reed switch. switch. Reed switch should be closed when the seat is vertical.	Reposition reed
		Defective PC board.	If above checks O.K.	Replace PC board.
	Motor continues to run and relay CR1 actuates but back section does not move.	Defective wiring or loose connections.	Check continuity of wires from terminal #16 on the PC board to the base cylinder sole- noids. Check connec- tions. See Wiring Diagram on Page 47.	
		Defective base anticavitation solenoid valve.	Pressure will be ap- parent in the return hose, Item D, Fig. 38 and should be ap- parent in the base return hose, Item C, Fig. 38. Check for slight magnetism at small cap, Item E, Fig. 38 on end of base anticavitation solenoid valve.	Replace base an- ticavitation solenoid valve if faulty.
	Motor shuts off and relay CR1 may or may not actuate.	Defective PC board.	Check relay operation.	Replace PC board.
Yhen depressing the Lithotomy Return" or Table Return" foot control switch the Model 115 stops in a chair position but the motor continues to un.	Motor does not shut off when a chair position is achieved.	Base clevis reed switch misadjusted or defective.	Check adjustment of reed switch. Check continuity of reed fective reed switch. switch. Reed switch should be closed when the chair position is achieved.	Reposition reed switch. Replace de-
		Defective PC board.	If above checks O.K.	Replace PC board.
From a lithotomy or pelvic tilt position the 'Table Acquire" foot control switch does not unction. All other switches function properly.	Starting from a chair position, the "Table Acquire" foot control switch functions properly.	Defective PC board.	Check relay operation.	Replace PC board.

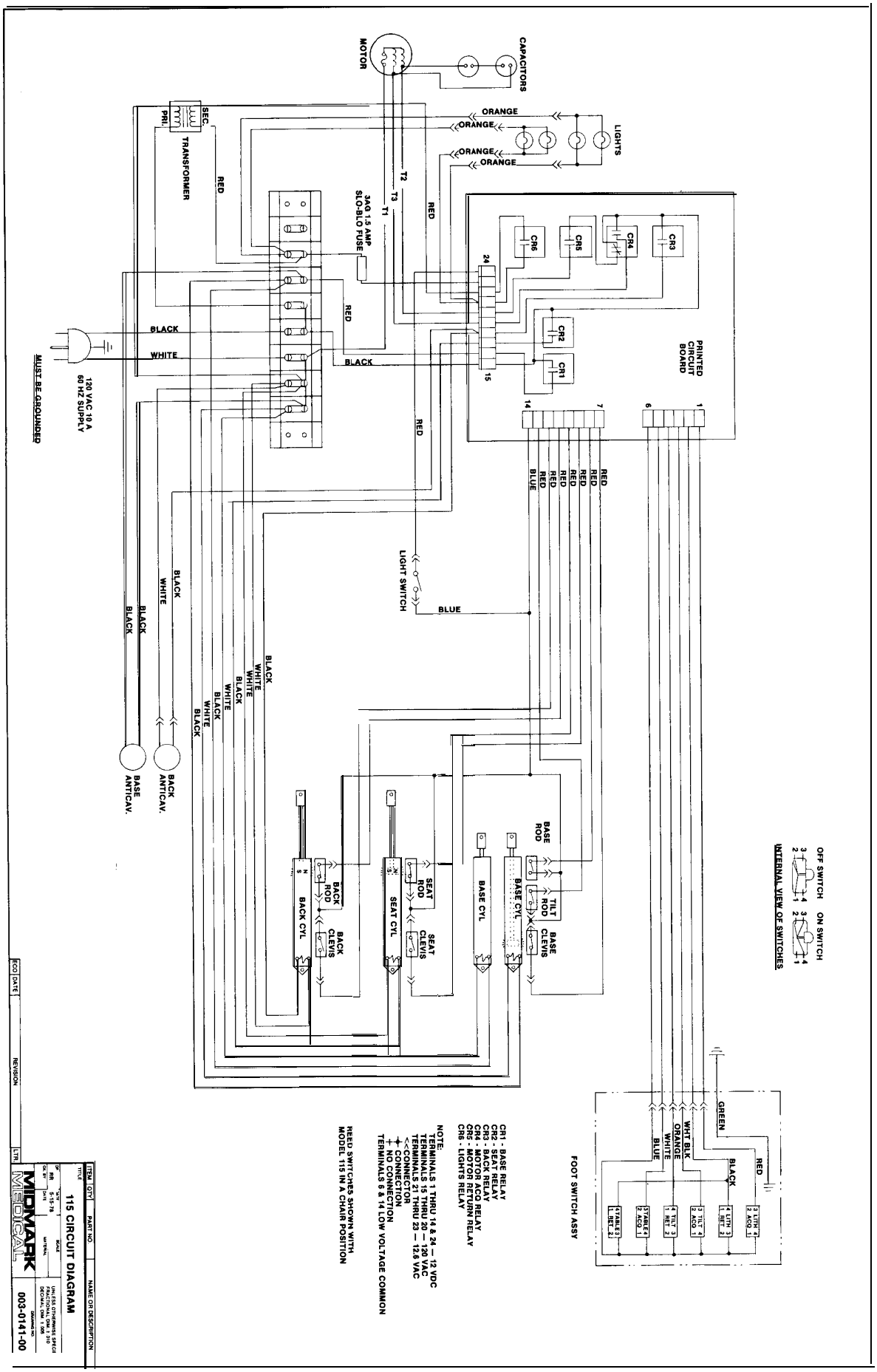
Return To Table Of Contents

Problem	Symptom	Probable Cause	Check	Correction
From a tilted position, when depressing the "Pelvic Tilt Down" foot control switch the Model 115 stops when the back section is horizontal but the motor continues to run.	Motor does not shut off.	Defective PC board.	Check relay operation.	Replace PC board.
From a tilted position, when depressing the "Pelvic Down" foot control switch the Model 115 does not stop when the back section is horizontal.	Motor continues to run and relay CR1 remains energized.	Tilt rod reed switch misadjusted or defective.	Check adjustment of reed switch. Check continuity of reed switch. Reed switch should be closed when the back section is horizontal.	Reposition reed switch. Replace defective reed switch.
		Defective PC board	If above checks O.K.	Replace PC board.
	Motor shuts off but relay CR1 and the base cylinder solenoids remain energized.	Defective PC board.	Check relay operation.	Replace PC board.
When the back section is rotating upward or downward (base cylinders extending or retracting), the motion is slower than normal.	Motor and all electrical functions properly.	Defective base cylinder solenoid.	Check for slight magnetism at large nut on end of each base cylinder solenoid, Item E, Fig. 270r Item E, Fig. 26.	Replace the base cylinder solenoid which shows no magnetism.
		Defective base cylinder.	If above checks O.K.	Replace the base cylinder which appears to be "dragging".
Back section may be rotated upward by hand or will drift into a full tilted position with weight on the back.	Motor and all electrical functions properly.	Defective base anticavitation solenoid valve.	If back section may be rotated upward by hand, base anticavitation valve is defective.	Replace base anticavitation solenoid valve.
Either base, seat, or back cylinder will not hold position. May drift slowly.	Motor and allelectrical functions properly	Dirt particle in cylinder valve.	Flush dirt particle to reservoir by running cylinder in and out about 10 times. If this does not help, a replacement cylinder will be needed.	Replace cylinder.
The illumination lights recessed into each leg support come on when they are not supposed to.	Motor and all other electrical functions properly.	Back rod reed switch misadjusted.	Check adjustment of reed switch. Check continuity of reed switch. Reed switch should be closed until the back cylinder begins to retract.	Readjust reed switch.
		Defective PC board.	If above checks O.K.	Replace PC board.
The illumination lights recessed into each leg support do not come on in the lithotomy position.	Relay CR6 actuates. Motor and all other electrical functions properly.	Defective wiring and/or loose connections.	Check continuity of wiring to lights. Check connections.	Replace defective wiring. Tighten connections.
	Relay CR6 does not actuate. Motor and al other electrical functions properly.	Defective light switch or defective wiring to switch.	Check continuity of wiring and light switch. Switch should be closed in the "on" position.	Replace defective wiring. Replace defective light switch. Tighten connections.

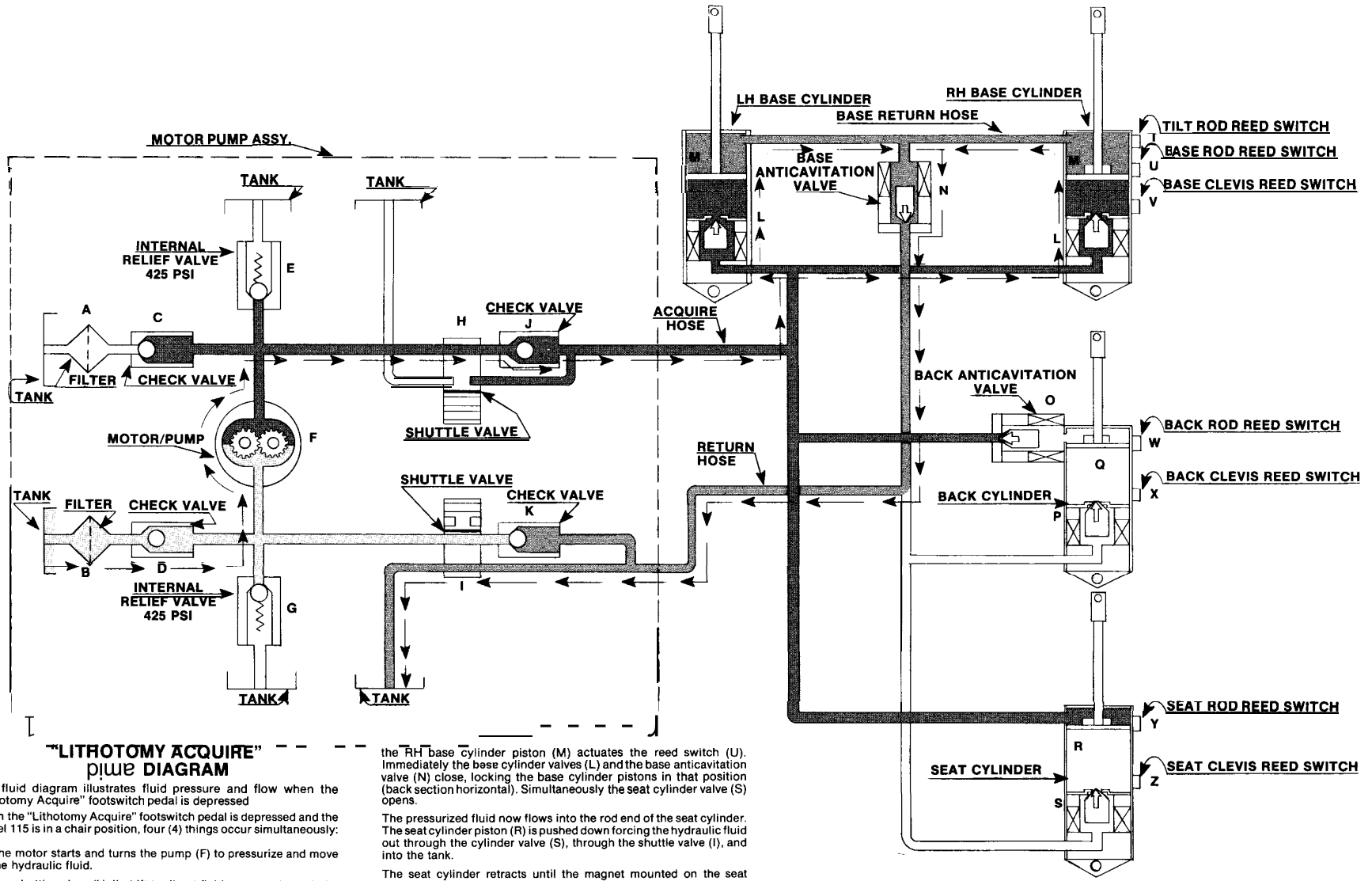
Return To Table Of Contents

Problem	Symptom	Probable Cause	Check	Correction
(continued)		Defective PC board.	If above checks O.K.	Replace PC board.
The illumination lights recessed into each leg support cannot be turned off in the lithotomy position.	Motor and all other electrical functions properly.	Defective light switch.	Check continuity of light switch. Switch should be open in the "off" position.	Replace defective light switch.
		Defective PC board.	If above checks O.K.	Replace PC board.

Return To Table Of Contents



Return To Table Of Contents



"LITHOTOMY ACQUIRE" FLUID DIAGRAM

The fluid diagram illustrates fluid pressure and flow when the "Lithotomy Acquire" footswitch pedal is depressed

When the "Lithotomy Acquire" footswitch pedal is depressed and the Model 115 is in a chair position, four (4) things occur simultaneously:

1. The motor starts and turns the pump (F) to pressurize and move the hydraulic fluid.
2. The shuttle valves (H, I) shift to direct fluid passage through the pump.
3. The base anticavitation valve (N) opens to allow fluid passage.
4. The base cylinder valves (L) open and the cylinder pistons (M) begin to move.

The pump "draws" hydraulic fluid from the tank through the filter (B) and check valve (D) and pressurizes the fluid. The pressurized fluid moves through the shuttle valve (H), the check valve (J), and the base cylinder valves (L) pushing the cylinder pistons upward. The hydraulic fluid is forced out of the rod ends of the base cylinders through the base anticavitation valve (N), through the shuttle valve (I), and into the tank.

The base cylinder pistons move upward until the magnet mounted on the RH base cylinder piston (M) actuates the reed switch (U). Immediately the base cylinder valves (L) and the base anticavitation valve (N) close, locking the base cylinder pistons in that position (back section horizontal). Simultaneously the seat cylinder valve (S) opens.

The pressurized fluid now flows into the rod end of the seat cylinder. The seat cylinder piston (R) is pushed down forcing the hydraulic fluid out through the cylinder valve (S), through the shuttle valve (I), and into the tank.

The seat cylinder retracts until the magnet mounted on the seat cylinder piston (R) actuates the reed switch (Z). Immediately the seat cylinder valve (S) closes locking the seat cylinder piston in that position (seat section horizontal). Simultaneously the back anticavitation valve (O) and the back cylinder valve (P) opens.

The pressurized fluid now flows through the back anticavitation valve (O) and into the rod end of the back cylinder. The back cylinder piston (Q) is pushed down forcing the hydraulic fluid out through the cylinder valve (P), through the shuttle valve (I), and into the tank.

The back cylinder retracts until the magnet mounted on the back cylinder piston (Q) actuates the reed switch (X). Immediately the back anticavitation valve (O) and the back cylinder valve (P) closes locking the back cylinder piston in that position (lithotomy position). Simultaneously the motor shuts off and stops pumping hydraulic fluid.

ECO	DATE	REVISION	LTR.

ITEM	QTY	PART NO.	NAME OR DESCRIPTION

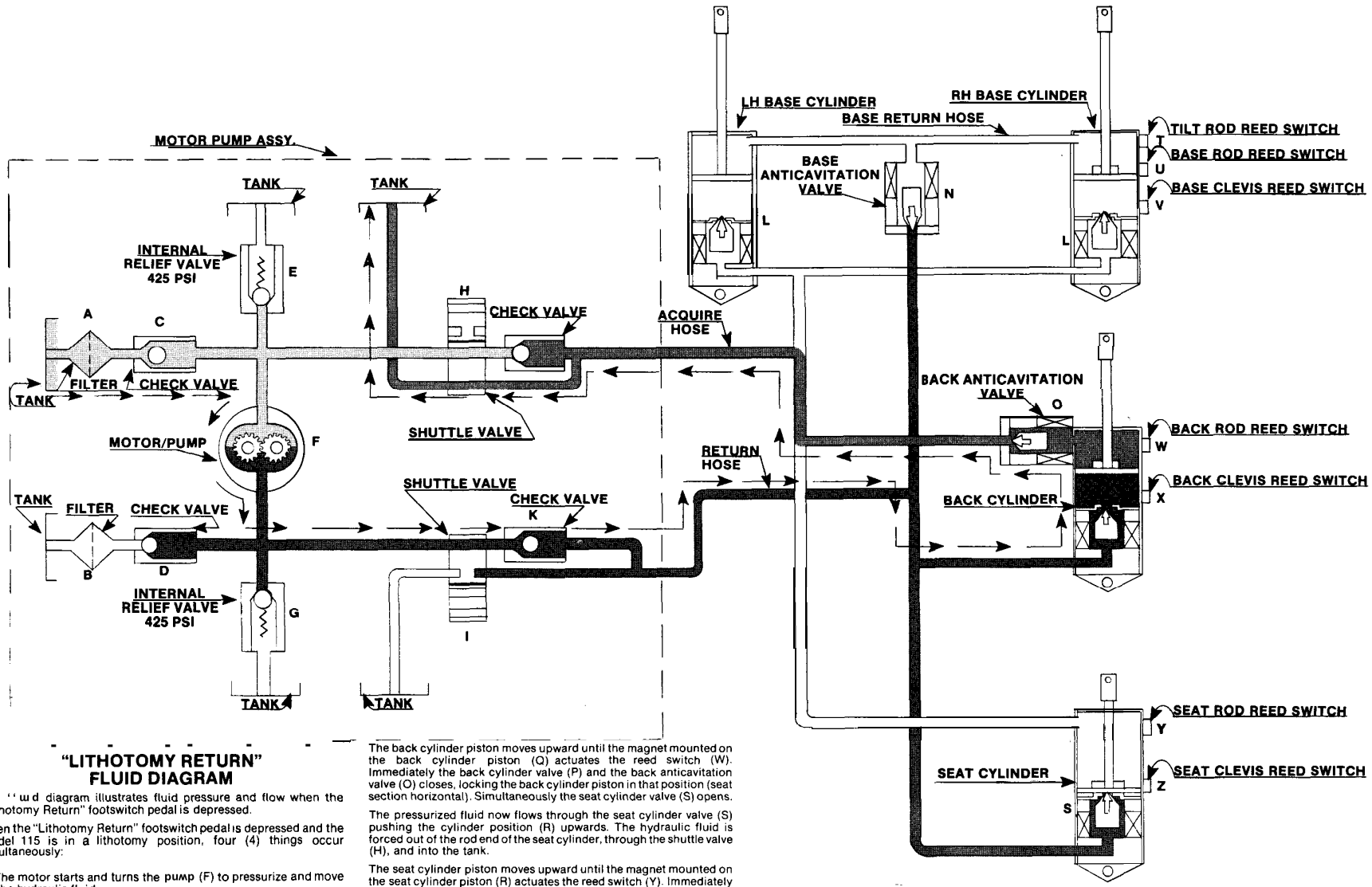
TITLE "LITHOTOMY ACQUIRE" Page 1 of 2

DR. BY	DATE	SCALE	UNLESS OTHERWISE SPECIFIED FRACTIONAL DIM. ±.010 DECIMAL DIM. ±.005
CK. BY	DATE	MATERIAL	

MIDMARK™ MEDICAL

DRAWING NO. 003-0213-00

Return To Table Of Contents



"LITHOTOMY RETURN" FLUID DIAGRAM

The "lithotomy return" fluid diagram illustrates fluid pressure and flow when the "Lithotomy Return" footswitch pedal is depressed.

When the "Lithotomy Return" footswitch pedal is depressed and the Model 115 is in a lithotomy position, four (4) things occur simultaneously:

1. The motor starts and turns the pump (F) to pressurize and move the hydraulic fluid.
2. The shuttle valves (H, I) shift to direct fluid passage through the pump.
3. The back anticavitation valve (O) opens to allow fluid passage.
4. The back cylinder valve (P) opens and the cylinder piston (Q) begins to move.

The pump "draws" hydraulic fluid from the tank through the filter (A) and check valve (C) and pressurizes the fluid. The pressurized fluid moves through the shuttle valve (I), the check valve (K), and the back cylinder valve (P) pushing the cylinder piston upwards. The hydraulic fluid is forced out of the rod end of the back cylinder through the back anticavitation valve (O), through the shuttle valve (H), and into the tank.

The back cylinder piston moves upward until the magnet mounted on the back cylinder piston (Q) actuates the reed switch (W). Immediately the back cylinder valve (P) and the back anticavitation valve (O) closes, locking the back cylinder piston in that position (seat section horizontal). Simultaneously the seat cylinder valve (S) opens.

The pressurized fluid now flows through the seat cylinder valve (S) pushing the cylinder position (R) upwards. The hydraulic fluid is forced out of the rod end of the seat cylinder, through the shuttle valve (H), and into the tank.

The seat cylinder piston moves upward until the magnet mounted on the seat cylinder piston (R) actuates the reed switch (Y). Immediately the seat cylinder valve (S) closes, locking the seat cylinder piston in that position (seat section vertical upwards). Simultaneously the base anticavitation valve (N) and the base cylinder valves (L) open.

The pressurized fluid now flows through the base anticavitation valve (N) and into the rod ends of the base cylinder. The base cylinder pistons (M) are pushed down forcing the hydraulic fluid out through the base cylinder valves (L), through the shuttle valve (H), and into the tank.

The base cylinders retract until the magnet mounted on the RH base cylinder piston (M) actuates the reed switch (V). Immediately the base anticavitation valve (N) and the base cylinder valves (L) close locking the base cylinder pistons in that position (chair position). Simultaneously the motor shuts off and stops pumping hydraulic fluid.

ECO	DATE	REVISION	LTR.

ITEM	QTY	PART NO.	NAME OR DESCRIPTION

TITLE: "LITHOTOMY RETURN"

DR. BY	DATE	SCALE	UNLESS OTHERWISE SPECIFIED: FRACTIONAL DIM. ±.010, DECIMAL DIM. ±.005
CK. BY	DATE	MATERIAL	DRAWING NO.

MIDMARK™ MEDICAL

Return To Table Of Contents

Return To Table Of Contents

COMMENTS

The Technical Publications Department of Midmark Corporation takes pride in its publications. We are sure that our manuals will fill all of your needs when you are performing scheduled maintenance, servicing, or repairs on a Midmark product.

However, if you find any errors or feel that there should be a change, addition, or deletion to a manual, please let us know!

Page(s) and Paragraph(s) Needing Changed:

Description of Error or Desired Change:

Please fax or mail a copy of this completed comment sheet to:

Midmark Corporation
ATTN: Technical Publications Department
60 Vista Drive
Versailles, Ohio 45380
Fax: (937) 526-5542

© Midmark Corporation 2000 SF-1621

Printed in U.S.A.

Return To Table Of Contents

FAX ORDERING FORM

(SERVICE PARTS ONLY)

NOTES:

- **ALL BLOCKED AREAS MUST BE COMPLETED.**
- **USE FOR NON-WARRANTY FAX ORDERS ONLY. WARRANTY ORDERS MUST BE TELEPHONED IN (1-800-MIDMARK).**

ATTENTION: SERVICE DEPARTMENT FAX#: 877-249-1793

ACCT #: _____ **P.O. #:** _____ **DATE:** _____

NAME: _____ **SHIP TO:** _____

ADDRESS: _____

CITY, ST.: _____

CONTACT: _____

PHONE: _____

☐ **NON-EMERGENCY ORDER - TO SHIP WITHIN 72 HOURS IF PART(S) IN STOCK.**

☐ **EMERGENCY ORDER - TO SHIP WITHIN 24 HOURS IF PART(S) IN STOCK (IF ORDER IS RECEIVED BEFORE 1:30 P.M. E.S.T).**

SEND NOTIFICATION IF PARTS ARE NOT AVAILABLE TO SHIP WITHIN 24 HOURS VIA E-MAIL OR FAX TO: _____

METHOD OF SHIPMENT

OTHER _____

UPS	FED EX
☐ NEXT DAY A.M.	☐ NEXT DAY A.M.
☐ NEXT DAY P.M.	☐ NEXT DAY P.M.
☐ 2ND DAY	☐ 2ND DAY
☐ GROUND	☐ ECONOMY

QTY.	PART #	DESCRIPTION (SPECIFY COLOR OF ITEM IF APPLICABLE)	COLOR CODE	PRICE/PER

Return To Table Of Contents

Return To Table Of Contents

Midmark Corporation
60 Vista Drive
P.O. Box 286
Versailles, Ohio 45380-0286
937-526-3662
Fax 937-526-5542
midmark.com

Because we care.

Subject To Change Without Notice

© Midmark Corporation - 2003

Printed in U.S.A.